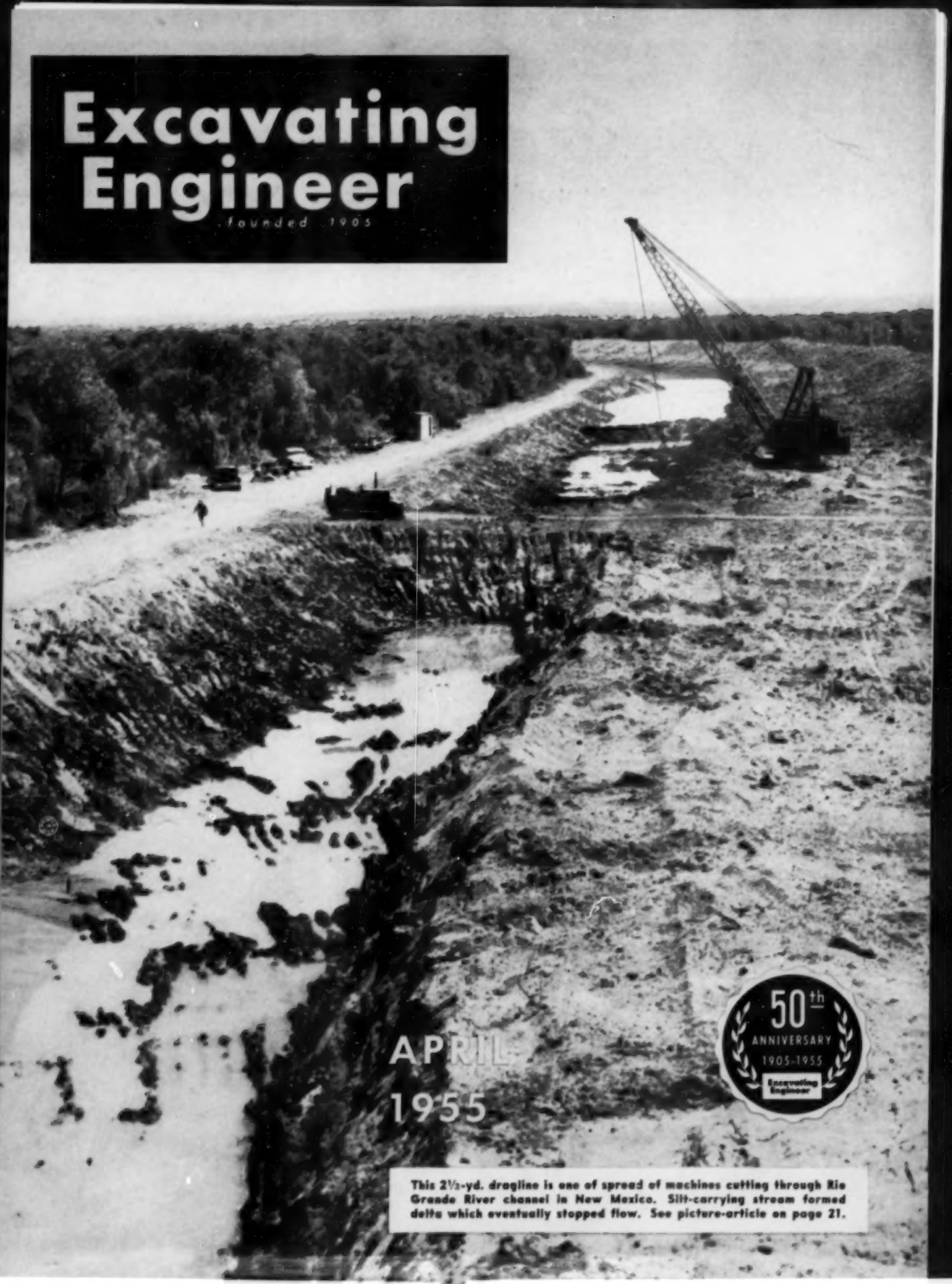
Excavating Engineer

founded 1905



50th ANNIVERSARY 1905-1955 Excavating Engineer

APRIL 1955

This 2½-yd. dragline is one of spread of machines cutting through Rio Grande River channel in New Mexico. Silt-carrying stream formed delta which eventually stopped flow. See picture-article on page 21.

Now you can drill 6¾ to 9-in. blast holes

fast and economically—

BUCYRUS ERIE

40-R ROTARY

The new 40-R is another significant Bucyrus-Erie advance in rotary blast hole drills. Flexible and powerful, it puts down medium-large holes quickly and efficiently in both hard and soft formations.

Continuous progress in any material is assured by this exclusive combination of features: *variable drilling speed* through Ward Leonard electric control and *variable down pressure* through hydraulic motor control.

The Ward Leonard variable-voltage system gives the operator smooth, instant command over rotation of the drill pipe. He can choose the most efficient speed for a given formation — can vary the speed as required without stopping the drilling operation. In hard formations maximum down pressure may be exerted on the bit while the drill pipe is turning slowly. In soft material, rotating speed can be increased substantially as down pressure is automatically reduced.

There are many other features that contribute to low operating costs and long machine life. Write today for full details and specifications on the 40-R, available with either diesel-electric or full electric power.

10855C

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

- 20,000 LB. PAYLOAD.
- 150 B.H.P. DIESEL ENGINE.
- HYDRAULIC TIPPING.
- SPEEDS UP TO 22 M.P.H.
- TWO WAY STEERING WITH FOUR SPEEDS BOTH FORWARD AND REVERSE.

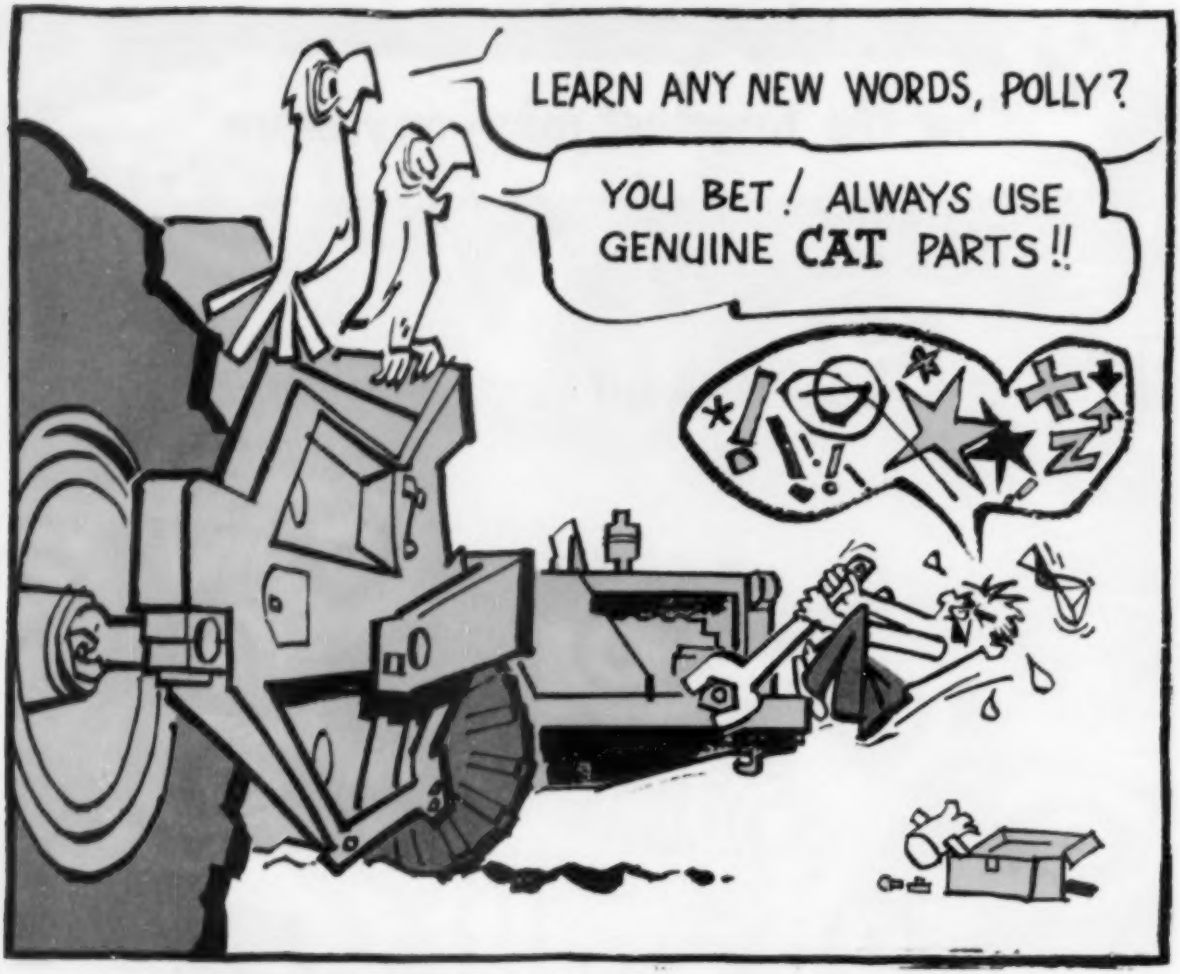
Write for list no. 1688/M

AVELING-BARFORD

HEAVY-DUTY DUMPER

AVELING-BARFORD LIMITED GRANTHAM ENGLAND

803



Down time sure brings out the classiest words in a man's vocabulary. Best way to avoid it is to insist on genuine CAT® parts every time. Then you're sure of getting parts that are made to the latest design, precisely manufactured of the right materials, rigidly inspected and tested.

Take the parts in the engine's heat zone, for example.

Different makes of liners, pistons and rings look a lot alike. But Cat cylinder liners are "wet type" design, made of hardened alloy iron with inner surfaces "Hi-Electro" hardened. Genuine Cat pistons are made of one-piece aluminum alloy castings, with a cast-iron band bonded into the top to form the hard-service top ring groove. And that top ring—if it's genuine Caterpillar—is heavily chrome-faced. Each Cat ring is individually cast from specially alloyed iron. With substitute parts: who can be sure?

The difference on the job: Caterpillar-built parts in your engine's heat zone give you new-machine performance, shorter break-in time, longer life and the true economy of reduced repair costs and uninterrupted production. With substitute parts: who can be sure?

Better get genuine Caterpillar parts every time.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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Excavating Engineer

founded 1905

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Cabinet Gorge Dam rises 208 feet between almost vertical rock cliffs in the Clark Fork River. Here's how the private power company owners keep the tailrace free of rock accumulation.

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Portrait by Fabian Bachrach

Bell Aircraft has 13,000 payroll savers

"From every point of view, the purchase of U. S. Savings Bonds contributes to the soundness of our economy and to the individual security of our citizens. I am proud that at Bell Aircraft our employees are helping to strengthen the national economy and their own future security through the Payroll Savings Plan.

"In a recent campaign Bell employees achieved a record of nearly 99% participation in the Payroll Savings Plan, bringing to 13,000 the total number of our employees who are saving systematically through the regular purchase of Savings Bonds."

LARRY BELL, *President Bell Aircraft Corporation*

If your company does not have the Payroll Savings Plan, or if you have the Plan and employee participation is less than 50%—get in touch with Savings Bond Division, U. S. Treasury Department, Washington, D. C. Your State Director, U. S. Treasury Department, will be glad to help you install a plan or show you how easy it is to build employee participation in your present plan.

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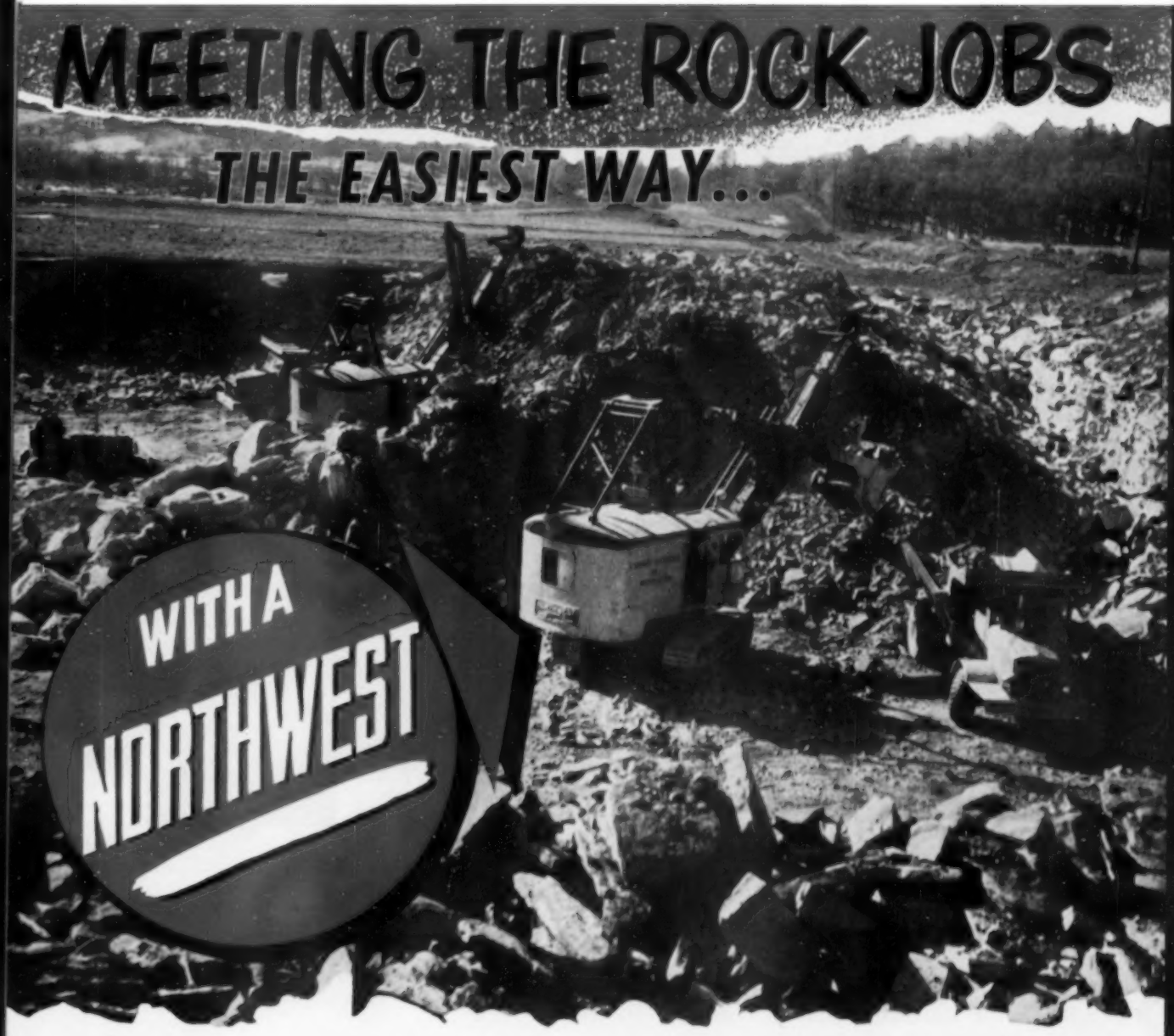
EXCAVATING ENGINEER

MEETING THE ROCK JOBS THE EASIEST WAY...



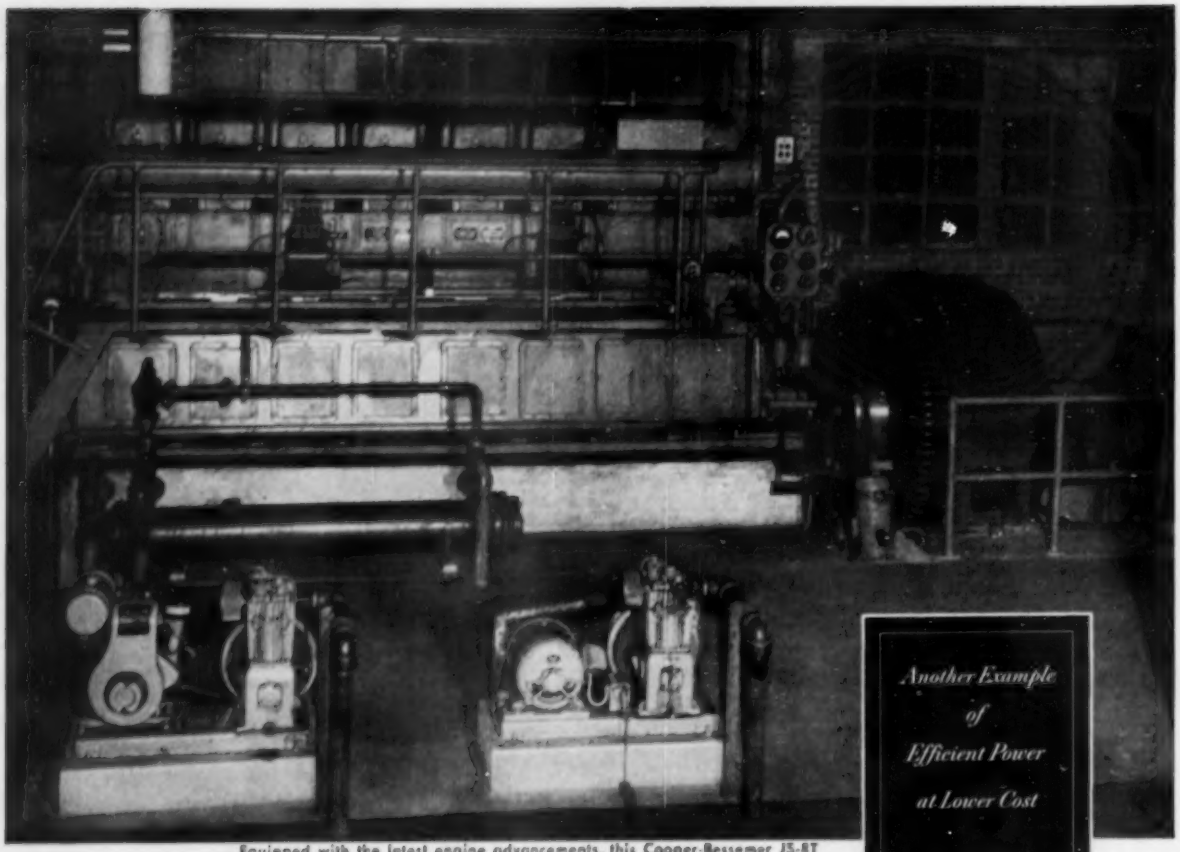
● Look at that Rock Pile! Ability to handle stuff like this is what backs up our statement, "that when you have a Northwest you have a *real* Rock Shovel." Performance in digging like this makes repeat orders, and repeat orders mean satisfaction.

Northwest design begins from the bottom up for rock work—cast steel machinery bases and machinery side frames, crawlers that give self-cleaning action and more easily negotiate tough going, the Cushion Clutch that eliminates shock overloads to parts under power, the "Feather-Touch" Clutch Control for easier handling. Uniform Pressure Swing Clutches that take the jerks and grabs out of swinging, the Northwest Dual Independent Crowd that utilzes force most other independent crowd shovels waste—these are but a few of the advantages that Northwest Rock Shovels bring you. And remember, if you have a *real* Rock Shovel you never have to worry about output in *any* digging. With the advantages and proved performance of a Northwest it's no wonder Northwest owners come back!

NORTHWEST ENGINEERING COMPANY
1506 Field Bldg., 135 South LaSalle St., Chicago 3, Illinois

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS



Equipped with the latest engine advancements, this Cooper-Bessemer JS-8T at Breese, Illinois Light and Power, easily develops 1435 bhp at 450 rpm.

Another Example of Efficient Power at Lower Cost

How "Packaged Power" *Pays Breese a BIG Bonus*

THE Cooper-Bessemer stationary generating engine in the Breese, Illinois Municipal Light and Power plant combines several unusual features that really pay off in greatly increased horsepower and unusually high thermal efficiency. To be exact, this 8-cylinder 13" x 16" supercharged JS engine develops 1435 bhp at 450 rpm — a rating out of the question only a few years ago, but now proved conservative.

To produce such horsepower, Cooper-Bessemer added, in addition to supercharging, pre- and after-coolers employing a Vapor Phase Cooling system. Moreover, for still further economy, steam from the engine's cooling water jackets is used to heat boiler feed water for previously installed steam turbines.

And here's a mighty important point . . . in spite of its horsepower, this Cooper-Bessemer unit continues to operate *quietly, smoothly, and with no noticeable surrounding heat.* Proved by performance, this modern JS has now taken over the full load at the Breese Plant . . . and with unprecedented economy.

If your plans call for complex generating and process service, or the most simple arrangement, you'll be money and performance ahead with Cooper-Bessemer. Ask our nearest representative for specific performance figures and estimated savings based on your particular power demands.

MOUNT VERNON, OHIO

COOPER-BESSEMER

GROVE CITY, PENNA.

New York, N. Y. • Washington, D. C. • Gloucester, Mass. San Francisco, Calif. • Houston, Texas • Seattle, Wash. Los Angeles, Calif • Chicago, Illinois • St. Louis, Mo. San Diego, Calif • New Orleans, Louisiana • Cooper-Bessemer of Canada, Ltd., Halifax, Nova Scotia.

Three 54-B shovels working on 350-ft. level at Contractor's Hill in Canal Zone.

"BIG DITCH" GETS A FACE-LIFTING

HISTORY REPEATS ITSELF AT PANAMA CANAL AS BUCYRUS-ERIE SHOVELS GO TO WORK AGAIN

History is being re-lived on the famed Panama Canal as three Bucyrus-Erie 54-B shovels are at work helping forestall a possible landslide which could block ship traffic for as long as a year.

Bucyrus-Erie excavators were an important factor on the original job of digging the Canal, too. There were 77 of them at work by the time the project was completed in 1907 — more than three-fourths of all excavators on the job.

The landslide is threatened by several fissures which appeared in recent years in Contractor's Hill. The job of excavating the potential slide area and stabilizing the hill was given to the Tecon Corp., Dallas, Tex., one of the nation's largest contractors, and was started in July, 1954. Tecon is to complete the work in 15 months.

This contractor's responsibility is to relieve the load on the hill as quickly as possible. The three 2½-yd. 54-B's were put to work loading blasted rock into trucks, working forward from the rear of the hill. The goal of the project is to stabilize the hill in 40 by 40-ft. benches, leaving a 1:1 finished slope. Total material removed may reach 2½ million yards.

Bucyrus-Erie 54-B shovels are built to handle rugged rock assignments like this. Their big-output performance, coupled with low maintenance costs, are typical of Bucyrus-Erie excavators of all sizes. See your distributor soon for complete information — sizes range from ⅜- to 4-cu. yd.

96E55C

BUCYRUS ERIE
South Milwaukee Wisconsin

1880 75 1955
YEARS OF SERVICE
to Men Who Shape the Earth

One of the 2½-yd. Bucyrus-Erie shovels loads rock from blasted area into a 15-yd. truck.

Here's Gaillard Cut of Panama Canal with fissured Contractor's Hill, at left.

For Greater Production

investigate M-R-S before you invest!

FOUR GREAT M-R-S TRACTORS DESIGNED FOR MAXIMUM PRODUCTION AT THE LOWEST POSSIBLE UNIT COST. 180 H.P., 235 H.P., 275 H.P., and 335 H.P.

FIVE GREAT WOOLDRIDGE-M-R-S OPEN-BOWL SCRAPERS FROM 8.2 TO 30 C.Y. STRUCK CAPACITY TO MATCH THE POWER AND TRACTION OF M-R-S TRACTORS.

You can't meet TOMORROW'S COMPETITION with YESTERDAY'S EQUIPMENT! Your profits depend on a THOROUGH INVESTIGATION of each piece of earthmoving machinery that you plan to purchase. The more complete your investigation, the more apparent it will become that M-R-S is the WORLD'S MOST MODERN HAULING EQUIPMENT. . . . AND the most profitable for you!

The complete M-R-S story is at your disposal . . . including comprehensive information compiled from exhaustive tests and cost analyses. This material will show you HOW and by HOW MUCH M-R-S hauling equipment CAN increase YOUR profits. Write today or see your nearest M-R-S Dealer.

Foreign Dealerships Available

THE EMBLEM OF DEPENDABILITY M-R-S MANUFACTURING COMPANY

FLORA, MISSISSIPPI

DON'T LET HIGH COMPACTION COSTS EAT UP YOUR PROFITS!

M-R-S TRACTORS ARE THE BEST SOLUTION TO YOUR COMPACTION PROBLEMS BECAUSE OF:

INDEPENDENT, TOWING-TYPE DESIGN

M-R-S tractors are designed and engineered as independent, towing-type prime movers. Powering extra-heavy compaction rollers is a towing job better performed by a towing-type tractor completely independent of the roller.

IDEAL WEIGHT DISTRIBUTION

The weight distribution of M-R-S tractors is naturally adapted to towing compaction rollers. The extra-heavy drive axle with soft low pressure tires of M-R-S tractors provides maximum traction . . . the light front end facilitates easy turning on loose fills.

GREATER TRACTION

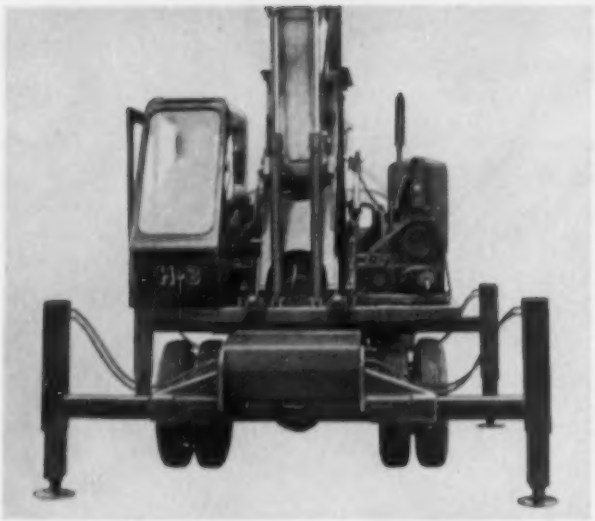
The great power of M-R-S tractors is efficiently transmitted and balanced with the extra-heavy drive axle for greater traction under varying ground conditions.

M-R-S TRACTORS CAN ALSO BE USED FOR SUPPLYING THE SPEED AND ECONOMY OF RUBBER TIRES TO OTHER FILL TOOLS SUCH AS HEAVY DISCS AND SCRATCHERS, THUS REDUCING DOWN TIME CAUSED BY WET, UNWORKABLE FILLS DURING INTERMITTENTLY BAD WEATHER.

This 335 horsepower M-R-S 200 tractor is shown powering two ballasted, extra-heavy, double-drum sheepfoot rollers in tandem.

The 50-ton, rubber-tired compactor is powered at greater speeds by big, rugged M-R-S tractors.

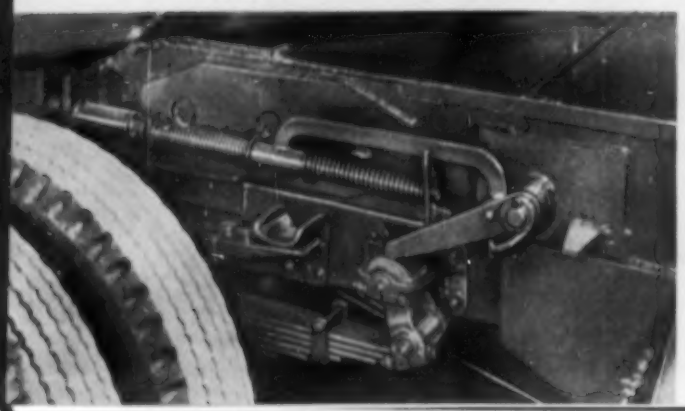
Up to 4 times the lifting capacity

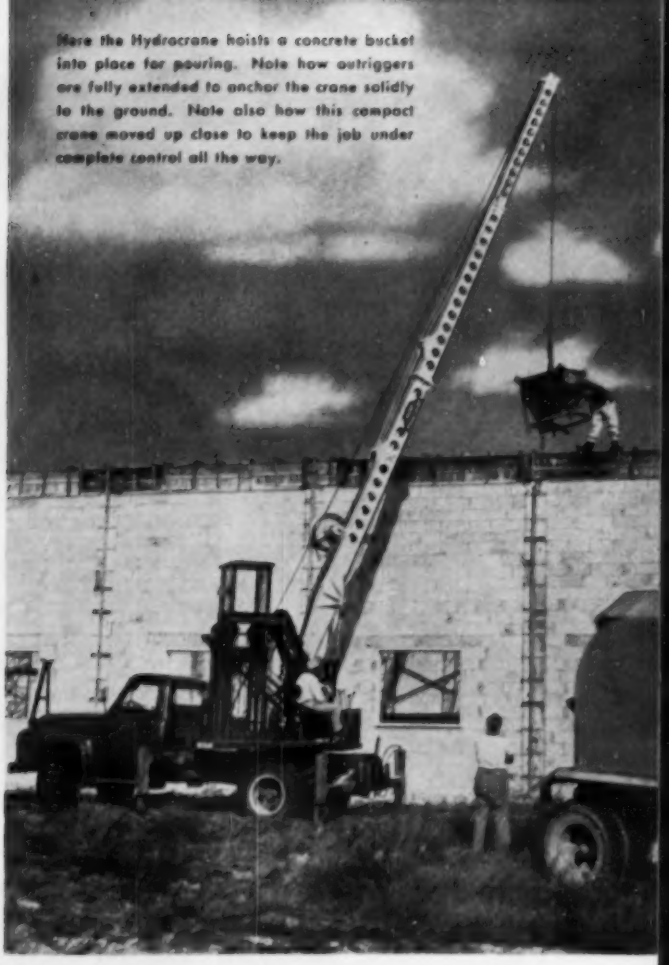


With Hydrocrane's Easily Set Outriggers

Four hydraulically operated outriggers that extend out and down in seconds not only multiply the Bucyrus-Erie Hydrocrane's lifting ability — but permit using a standard truck instead of an expensive crane carrier. With outriggers fully extended the Hydrocrane's lifting capacity is increased by as much as 4 to 1 on over-the-side lifts — where any crane's stability is lowest.

No spring deflection. An automatic lock-out device which immobilizes truck springs eliminates spring deflection while crane is working. Add outriggers that take the load off the tires and you eliminate any danger of bouncing and swaying due to flexing of tires and springs . . . a particularly important advantage in erection work, handling fragile material, or precise excavation where any deflection is greatly magnified at the boom point. When spring locks are released, crane travel speed is not limited as is the case with conventional crane carriers which do not have any rear springs.





Here the Hydrocrane hoists a concrete bucket into place for pouring. Note how outriggers are fully extended to anchor the crane solidly to the ground. Note also how this compact crane moved up close to keep the job under complete control all the way.

Outriggers an Operator Really Uses

Outriggers are individually controlled right from the operator's station, making it possible to level crane on uneven ground — without cribbing or blocking. Even with dozens of crane moves during the day, operators readily use outriggers because they're so easy to extend and retract.

Outriggers form an integral part of crane subbase and easily accommodate the maximum load crane can lift. No twisting and straining on springs and truck chassis — no heavy loads to flex or blow out tires.

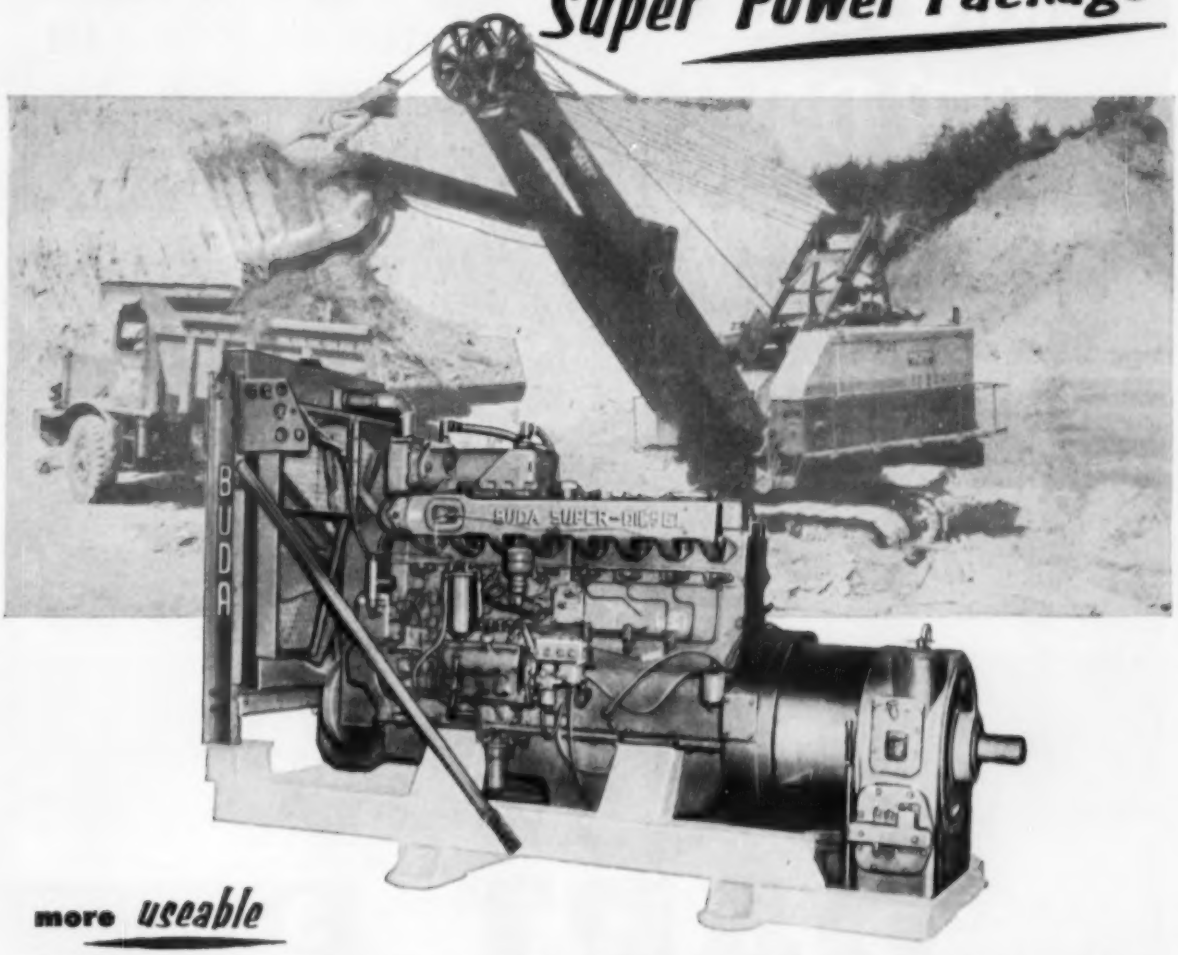
Because the patented outriggers provide such solid stability, you can take full advantage of the Hydrocrane's precision hydraulic control—hold the crane steady for accurate movement of building materials, fragile objects . . . move loads in and out of close quarters with maximum safety. Your Bucyrus-Erie distributor can **show** you with a demonstration on your own job.

56H33C

BUCYRUS ERIE
South Milwaukee
Wisconsin

1880 75 1955
YEARS OF SERVICE
to Men Who
Shape the Earth

Buda Diesel Torque-Converter Super "Power Package"



more *useable*

horsepower and torque . . . . for faster, smoother shovel operation

The great new Buda 8DAS-1290 Supercharged Diesel Torque Converter Power Unit is engineered for the continuous, high lugging service shovel work demands. It's shovel power that packs a smooth punch.

Because the Buda Diesel Torque Converter Unit automatically matches its tremendous power and wide range of torque to speed hoisting, swinging and traveling operations, shovels and cranes do more work.

Downtime and maintenance costs are minimized too — transmissions, clutches, brakes, cable and drums stay in service longer, because the smooth, cushioned fluid drive of a Buda Torque Converter Unit is easier on all working parts of the machine.

***Before** you re-power or specify power for a new shovel, crane or dragline, get the Buda Diesel Torque Converter Unit story. It's worth knowing. Your nearby Buda Distributor can give you complete details now.*

BC-33

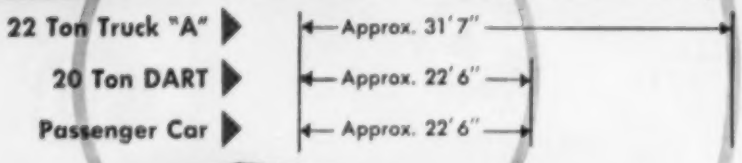
BUDA DIVISION • HARVEY, ILLINOIS

ALLIS-CHALMERS MANUFACTURING COMPANY

MORE CYCLES PER DAY!

DART'S GREATER MANEUVERABILITY CAN CUT YOUR COSTS!

Look at this turning radius comparison:



DART

TONNAGE ENGINEERED TRUCKS

Waste motion in truck haulage kills profits. Thanks to DART engineering, you can put a stop to waste motion.

The combination of DART'S box girder frame, longer two-stage springs, and shorter turning radius combined with higher horsepower engines enables quick spotting at the shovel in the tightest quarters. Added to this efficiently operating combination, a torque converter drive (which is optional) makes smoother, faster operation.

A stop-watch comparison will convince you...DART TRUCKS can deliver more loads per day, more profits for you.

There's a DART man NEAR YOU who will give you the complete data on DART TRUCKS. Give us a call or write:

DART TRUCKS
Kansas City 8, Missouri
SUBSIDIARY OF THE CARLISLE CORPORATION

3 MONEY-SAVING FEATURES:

15-SECOND DUMPING. Twin, single-stage, double-acting jacks raise the body to maximum dump position in just 15 seconds. Fully protected cylinders mean a clean, positive dump at all times under the most rugged conditions.

OPTIONAL TORQUE CONVERTER. The smooth-acting torque converter provides down-hill braking with compression. It means less brake, tire and road maintenance...assures faster starts; longer service life of transmission and engine.

TWO-STAGE SPRINGS — save money by reducing shock to all component parts of the truck. They provide greater tire-to-road contact and cushion the wear. Tires last longer.

How Long Will a PAYLOADER® Last?

Model HM clocks over 18,000 hours

WALT KEELER, *Pres.*
Walt Keeler Company, Inc.

He says," . . . these machines have given us a more economical performance than the track-laying tractors, due to the abrasiveness of the sand and gravel they are subjected to. Furthermore, rubber-tired tractors are faster, which is also an asset to our operation."

WALT KEELER has used a fleet of tractor shovels for many years on his sand, gravel and ready-mix operations at Wichita, Kansas.

He bought his first "PAYLOADER" tractor shovel, a four-wheel-drive model, in 1949 and added two more later. Last December he traded in the oldest on a new one. This old 1949 unit had clocked over 18,000 hours of use — nearly twice what is considered normal for construction equipment — and was still in fair condition. Needless to say, Mr. Keeler is sold on "PAYLOADER" tractor shovels.

This factual report is not intended to create the impression that every "PAYLOADER" will give every owner 18,000 hours of satisfactory service. But it is an example of what proven "PAYLOADER" design, plus "PAYLOADER" Distributor service and intelligent preventive maintenance by the owner can accomplish.

THE FRANK G. HOUGH CO.
709 Sunnyside Ave., Libertyville, Ill.

Send catalog covering all seven "PAYLOADER" MODELS AND the many useful attachments for them.

Name .....

Title .....

Company .....

Street or Box No. .....

City ..... State .....

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.
SUBSIDIARY • INTERNATIONAL HARVESTER COMPANY

NEW

35 ton Rear-Dump

Model B Tournapull Rear-Dump is a new machine completely designed and built by the new LeTourneau-Westinghouse Company. Developed by our engineering and research staff, it was built after careful study of today's hauling unit requirements. Its design is based on eight years of experience with our revolutionary rear-dump units.

Hundreds of these earlier units are at work today . . . in mines, quarries, collieries, construction jobs . . . anywhere that material is being hauled by modern methods and modern equipment. They have been highly successful, as proved by our list of re-orders from old customers.

In the new machine, the Model B prime-mover powering the B Rear-Dump is a big powerful tractor engineered for quick and easy accessibility of all components. Every part has a "plus" safety factor to give you the most rugged hauling unit ever built. Dozens of improvements, large and small, give you a hauler that does the job better than any Rear-Dump ever produced.

10 forward gear speeds: 2, 4, 6, 8, 11, 16, 19, 24, 28, 34 mph . . . 2 reverse speeds: 2, 4 mph.

Check these features:

High speed matched to haul conditions

Tournapull B Rear-Dump has 10 forward speeds to 34 mph. Operator easily selects gear which gives him top speed. Double-clutching has been eliminated by addition of clutch brake for faster, easier shifting. Rapid shift and snappy acceleration of 300 hp diesel engine lets you move rapidly into higher gear ranges.

Improved gradability

Better distribution of weight forward onto drive wheels allows "B" to go up steeper grades than previous models could. This improvement, plus selection from 10 forward speeds, plus ample horsepower gives you a unit that can climb at reasonable speed up any grade normally found on any mine, quarry, or construction job.

LET

A Subsidiary of
Westinghouse Air Brake Company

Non-stop U-turns in 35′

2-wheel prime-mover turns 90° right or left . . . machine in normal use makes non-stop 180° turn in space only 35′ wide. With bowl raised (which shortens wheelbase from 21′ to 12½′), "B" turns around non-stop in space only 27′ wide. This extreme maneuverability enables you to work in tight quarters where smaller conventional haulers often cannot go. You save time on any job at both shovel and dump because Tournapull can position faster . . . rarely needs to jockey back and forth like conventional haulers.

Easy loading

Big wide "target" area makes for fast loading cycles. Bowl is 17′8″ long, 10′2″ wide, has maximum depth of 7′6″. Rear of body provides wide, low entry for dipper to give extra speed advantage for the excavator. Low entry, plus wide body, reduces spillage. Rig carries 35 tons, 23 yards struck, 27 yards on 2-to-1 heap, without sideboards.

Fast dumping

Body raises to vertical position at touch of dashboard switch. Inside of body is completely streamlined. No material rides back to shovel or dragline to steal payload room on next trip. Edge of bowl swings behind and below rear wheels so rocks cannot roll forward to lodge against wheels nor can material pile under rear end.

Better flotation

Low-pressure tires more than 2 ft. wide and 7 ft. high, both front and rear, give excellent flotation. You get better traction than with other rubber-tired haulers because these broad pneumatics, with their low pressures and thick, deep lugs, have more gripping surface than duals. These features, plus power-transfer differential and power steer, take Tournapull through soft going *loaded* where other haulers with their narrow tires cannot go empty. Unit uses four 27.00 x 33's, 30 ply, as standard . . . tires *and* wheels are interchangeable between front and rear.

Rugged construction

Body is heavy steel plate, rigidly reinforced with box-beam ribs. Gussets are included for extra support at points of special stress. Slanting surfaces of scoop-shaped body take blows at an angle and tend to quickly establish a load cushion to protect the floor. Bottom consists of 2 layers of heavy steel plate separated by thick steel billets to absorb loading shocks. Floor is faced with welded-on tool-steel strips to resist wear. Main case of prime-mover is built extra strong . . . will not distort to put strain on power-train.

Simple, positive electric control

Fingertip electric control of hoist and steer gives fast, positive action. Big advantage of electricity is that motors can be placed at point of action . . . there's far less power loss than with other control systems . . . no leakage or pressure problems . . . less maintenance. Push-buttons on dashboard operate dump at touch of fingertip.

Lower maintenance

Problems of conventional rear-dumps are eliminated by simple design of B Tournapull Rear-Dump. You have no troublesome hydraulics, no long driveshafts, no springs, spring hangers, no hinged steering-connections. Owners all over the world report exceptionally high mechanical efficiency and low maintenance.

Greater safety

Heavy-duty air brakes provide a total of 7536 sq. in. total braking surface. That's more braking surface on each wheel than most haulers have on the whole machine. Smooth and powerful, they provide safe control in any weather . . . improve maneuverability . . . give operator confidence for faster operation on steep grades, narrow, winding haul roads. Optional electro-

tarder that puts an electrical resistance on generator power circuit provides additional braking action and saves wear on service brakes. Parking brake locks transmission output shaft for simple, sure braking action.

Job-proved prime-mover

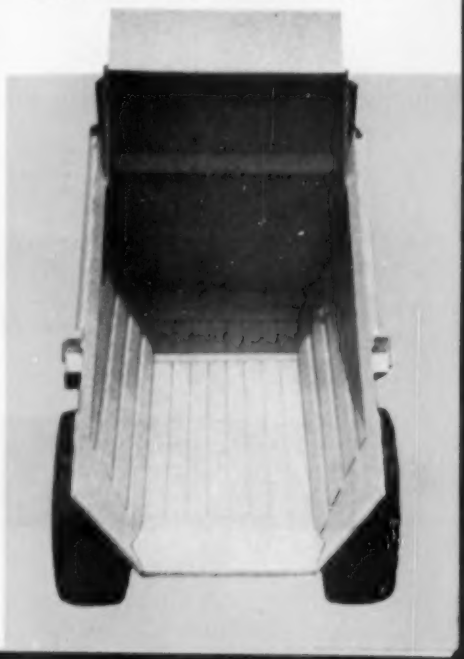
17 years' experience on thousands of installations is behind the famous Tournapull 2-wheel prime-mover. Its design gives you power steering through geared kingpin coupling prime-mover and hauling unit. You also get the exclusive Tournapull power-transfer differential which automatically transfers power from slipping drive wheel to drive wheel on firmest footing.

Profit-making interchangeability

You can interchange Rear-Dump with Scraper, Bottom-Dump, Flatbed, or Crane. Each additional trailing unit costs only about 25% of original total price. You save money because all you need buy is trailing unit body . . . rear wheels, tires, and brakes may be interchanged.

You'll want to learn more about all the advantages of the remarkable new Model B Tournapull Rear-Dump. Ask your LeTourneau-Westinghouse Distributor for all the details.

Tournapull—Trademark Reg. U.S. Pat. Off. 88-754-G



LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

ACROSS HILLS AND VALLEYS

Explosives Research Pays Off

Blasting trenches in hard granite formations to install a pipeline in Southern California called for engineering skill, operating know-how, and a knowledge of explosives.

Over hills and valleys and across rivers and gorges, pipelines provide safe, sure, economical means of transportation for petroleum, natural gas, water, and other mineral resources. When rock is encountered, blasting crews with specialized explosives take over. Here is where explosives research pays off.

Continuous research and extensive knowledge of field conditions have been Hercules' business for more than forty years. Hercules technical representatives welcome opportunities to discuss problems and help in the selection of the right explosives and the most efficient methods for use in mining, quarrying, construction, and exploration projects.

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Explosives Department, 972 King Street, Wilmington 99, Delaware

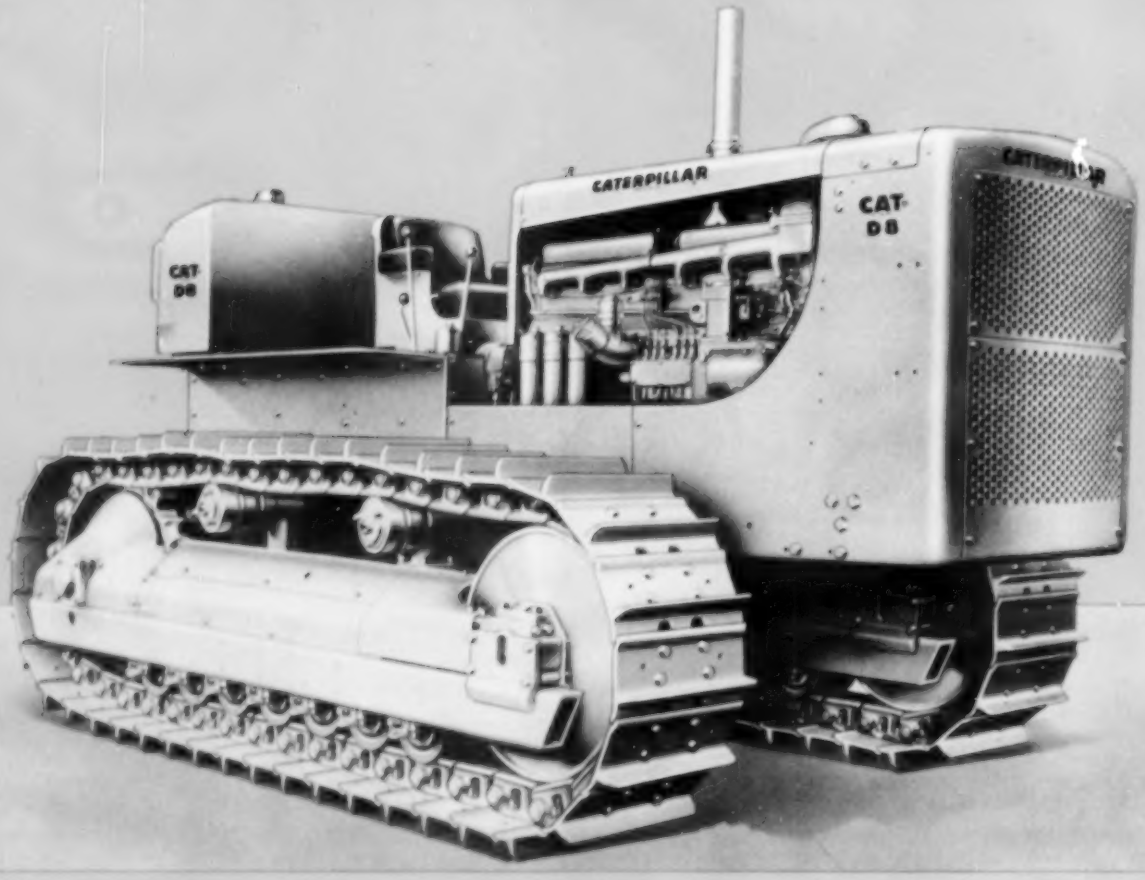
Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazelton, Pa.; Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

XR55-3

NEW

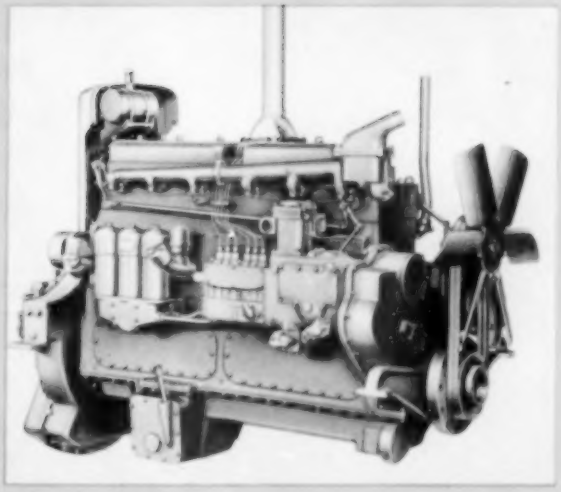
CATERPILLAR ANNOUNCES THE NEW D8

SERIES D and SERIES E

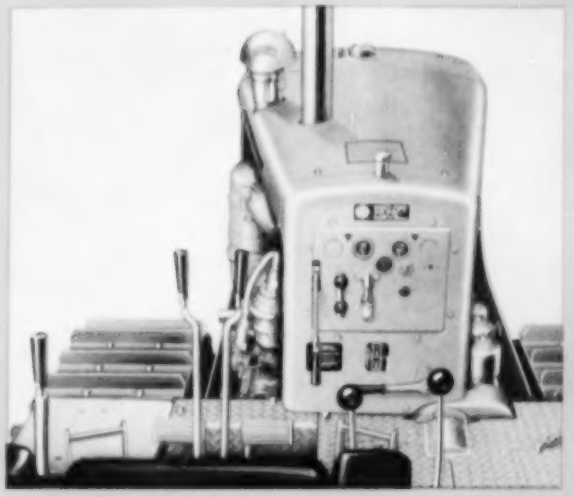


Choice of TORQUE CONVERTER or DIRECT DRIVE

You're looking at a major advance in tractor design—the new Caterpillar D8 Tractor. While it still bears the name of the unit that earned world-wide recognition as "boss of the crawlers," it is basically a *new* machine with 155 HP at the drawbar and your choice of torque converter (Series D) or direct drive (Series E). From its new 7-roller track frame to its new 191-HP, 1200-r.p.m. engine, it is built to deliver an even higher standard of money-making production on *any* track-type tractor application in *any* field. Along with its advance-design features, it retains such outstanding Caterpillar exclusives as the oil clutch and certain other job-proved developments. As a result, you can figure on it for *more* work at *lower* cost with *less* down time on *any* job. For complete information about the new, heavy-duty D8 Series D and Series E, see your nearby Caterpillar Dealer.

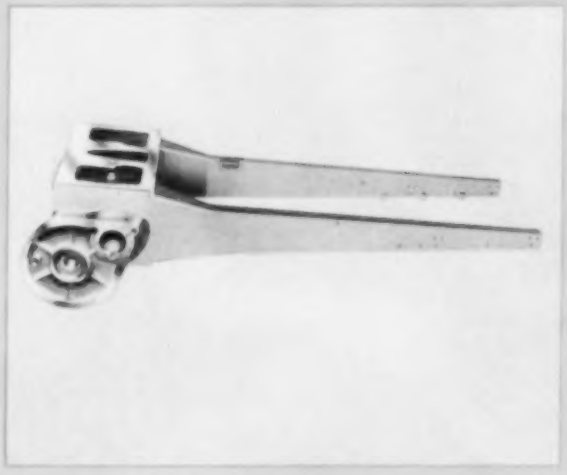


NEW ENGINE, with new fuel injection system incorporating capsule-type injection valves. Flanged center main bearing to take crankshaft thrust. "Hi-Electro" hardened timing gear integral with crankshaft.



NEW EASY-WORKING CONTROLS handy to comfortable, one-man seat. The new streamlined hood affords greater visibility. The new easy-to-see instrument panel is attached direct to engine.

NEW "LIVE SHAFT" DRIVE, independent of flywheel clutch. This important new feature provides constant power for rear-mounted cable controls or other equipment.



NEW WELDED ONE-PIECE STEERING CLUTCH CASE—main frame assembly for a stronger "backbone." Transmission and steering clutches can be removed without disturbing other parts.

NEW OPTIONAL DRIVE, torque converter or direct drive, whichever is best for your job. *Torque converter:* torque multiplication of 5 to 1 gives smooth operation in each speed range. 3 forward and 3 reverse: low 0 to 3.6 m.p.h.; intermediate 0 to 5.3 m.p.h.; high 0 to 7.4 m.p.h. *Direct drive:* 5 speeds forward and 3 reverse.

NEW 7-ROLLER TRACK FRAME for greater stability, flotation and better ride.

NEW "WATER-QUENCHED" TRACK SHOES for longer life than ever before.

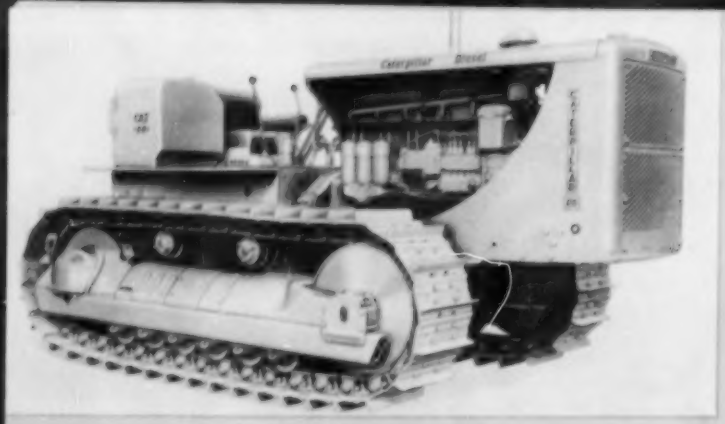
NEW HYDRAULIC BOOSTER STEERING, pump drive direct from engine, independent of flywheel clutch, for maximum steering ease.

NEW STARTING ENGINE with more power for faster, surer starts in any weather.

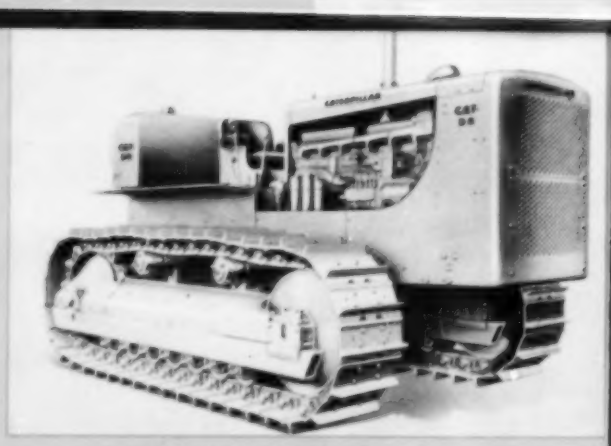
NEW "IN-SEAT" STARTING for greater convenience.

NEW 118-GALLON FUEL TANK, enough for normal 12-hour operation.

NEW ATTACHMENTS include cable controls—the new rear-mounted double drum No. 29 with constant power drive direct from engine, and the new front single drum No. 30. New, larger No. 8A and No. 8S Bulldozers, both cable and hydraulic controlled, are also available. The new No. 8U "U"-blade 'dozer has extra strength. Cable-controlled 'dozers use a 6-part line for greater lifting power. All equipment used on the D8 can be used on the new D8 Series D and Series E.



The D8



The NEW D8 Series D and Series E

CHECK THE DIFFERENCE ADVANCE DESIGN MAKES BETWEEN THE D8 AND THE NEW D8 Series D and Series E

	D8	D8 Series D with torque converter	D8 Series E with direct drive
Operating Weight	38,155 lb.	41,265 lb.	40,430 lb.
Ground Clearance	10½ in.	13 in.	13 in.
No. Track Rollers	6	7	7
No. Track Shoes	39	42	42
Length of Track on Ground	99¾ in.	111¾ in.	111¾ in.
Area Ground Contact 22-in. Shoe	4389 sq. in.	4917 sq. in.	4917 sq. in.
Fuel Tank Capacity	98 gal.	118 gal.	118 gal.
Drawbar	Swinging	Fixed	Fixed
Drawbar Pin Size	1¾ in. dia.	2¼ in. dia.	2¼ in. dia.
Steering Clutch	Over center spring booster	Hydraulic booster	Hydraulic booster
Steering Clutch Case	Cast iron. Integral with transmission case.	Steel fabricated. Separate from transmission case.	Steel fabricated. Separate from transmission case.
Transmission Case	Cast iron. Integral with steering clutch case.	Cast iron barrel. Separate from steering clutch case.	Cast iron barrel. Separate from steering clutch case.
Main Frame	Box section bolted to cast case.	Box section welded to steel case.	Box section welded to steel case.

Production-wise and profit-wise, you have a new yardstick of performance in the CAT* D8 Series D and Series E. Your Caterpillar Dealer, source of prompt service, will be glad to show you how this rugged new yellow machine can pay off for you!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

MAIL TODAY!

CATERPILLAR TRACTOR CO., Peoria, Illinois, U. S. A.

Please send me additional information on the D8 Series D and Series E.

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The new D8 Tractor —another example of CATERPILLAR LEADERSHIP in action

PRINTED IN U. S. A.

Excavating Engineer
founded 1905 APRIL, 1955

Airplane picture shows clearing operations. Tractor with brush rake is stacking brush in rows which will be fired when dry.

Rebuilt River

by Ray Day

When vegetation choked up Rio Grande channel, Bureau of Reclamation engineers conceived a unique construction plan to restore New Mexico River to new peak of hydraulic efficiency.

WHEN a dam is built across a main-stem stream, it isn't often that the river can't reach the reservoir.

Engineers attached to the Albuquerque, N. M., office of the U. S. Bureau of Reclamation know all too well that it can happen. Part of the concern which is plain to see on their faces is because almost $4 million is currently being spent in a series of contracts designed to correct that extremely unique condition on the Rio Grande River. When the work is finished a year or so from now, practically all the water in the Rio Grande above Elephant Butte Dam will flow once again into the reservoir. And the annual estimated 145,000-acre-foot water loss—stolen by natural causes—will be halted, thanks to excavating equipment.

When Elephant Butte Reservoir first began storing water back in 1916, few engineers believed anything could ever threaten the construction miracle which they had wrought. But there were a few far-sighted men—among them J. I. Savage of the Reclamation Service—who predicted correctly what would happen. Savage's warning in essence was this: the rich silt-laden delta at the river's junction with the reservoir would eventually create a rank growth of willows, salt cedar and cottonwood. This natural vegetation would use much of the river's input. It might even block the river off from the reservoir.

That is exactly the condition which came to pass. Within only a few score years, a rich delta quickly formed at the upper end of Elephant Butte Reservoir. Soon it was choked with acres of "bosque"—the term engineers use for the dense growth. By 1950 the upper 22 miles of the reservoir was an impenetrable swamp area. The town of San Marcial, which once stood two miles clear of the reservoir, was threatened with engulfment by spreading acres of bosque. Although hydrographs of the Rio Grande show a fairly normal rainfall input in the watershed, it has been 1942 since Elephant Butte's spillway last was used. In the last six years, water in the reservoir went down as low as 10,000 acre-feet—when 400,000 is considered normal. In effect, the bosque at San Marcial has choked the life out of

Excavators dig pilot channel and build dirt levee for diversion operations. Background rig is a Northwest ¾-yd. dragline.

irrigation and domestic use farther down the Rio Grande.

After extensive investigation and study, the U. S. Bureau of Reclamation came up with one of the most unusual construction programs in its history. This work will solve the problem for many years. It is designed to create once again an unimpeded channel for the entry of the Rio Grande into Elephant Butte Reservoir. It will provide a broad floodway for higher-than-average flows. It will revamp both the riverside and interior drainage systems so that excess water from local irrigation can find its way back to the reservoir for further use downstream.

Coincidentally with that big program, the Bureau is rehabilitating two of its upper-river dams in this system. This work includes refinishing of a steel-faced storage dam in the mountains above Albuquerque, and rehabilitation of Isleta Diversion Dam 15 miles south of Albuquerque. Contractor D. D. Skousen & Son have that job under a $290,000 contract. The work was scheduled for March 1 completion.

There will always be the growth problem to contend with—for example, a willow supplied with all the water it needs will grow five feet a year in the vicinity of San Marcial — but better maintenance of the new channels and drainage ditches is expected to keep the situation under tighter control in the future. Use of water in the Rio Grande is rapidly approaching the 100% point, so every conservation measure which engineers can devise is now vitally necessary.

Channelization Is Tough Job

The Bureau's engineers realized that rechannelization of the Rio Grande River would be the toughest part of the program, and would probably take the most amount of time. Contracts for this work were therefore scheduled first. On September 29, 1951, a $928,475 contract was awarded for the first 22 miles. The job went to McGinnes Bros., Inc. of Houston, Texas, and included 22 miles of new channel from Elephant Butte Reservoir extending upstream.

Excavation under this contract called for a normal river channel capable of carrying 2,000 cubic feet per second and, in addition, a cleared floodway aret 1,000 feet across. The channel for the normal flow of the river was approximately 32 feet wide at the bottom, with 2:1 side slopes in an average cut of about 14 feet. No lining was required for the new channel.

The job was primarily excavation in boggy digging. At the southern or reservoir end, for example, the ground was so boggy that the support of excavating equipment even on mats was questionable. McGinnes Bros. moved in with three machines. Largest was a Manitowoc Model 4500 dragline, crawler mounted and equipped with a five-yard Hendrix bucket. Completing the team were a Bucyrus-Erie 54-B dragline, carrying an outsize 3-yard Hendrix bucket and a Model 25 Northwest dragline. These machines worked directly from their crawler pads wherever they could. When mats were necessary, they were brought in long before the need became marginal. The State of New Mexico had done some work in connection with the establishment of earth dikes in this area, and subsequent drainage of the worst marshes made the use of heavy machinery practical but tricky very close to Elephant Butte's reservoir.

Top: List & Clark's HD-20 Allis-Chalmers carries front-end V-type brush cutter. Below: Same firm's Caterpillar D8 mounts Fleco root plane with 11-ft. blade and 4-ft. discs.

Modify River Channel

One of the trickiest spots in the McGinnes Bros. job was a spot called Brushy Lake, near the center of the job. It was a heavy bosque area, so soft and wet that the footing of excavating equipment even on mats was precarious. The design of the Rio Grande channel through this point had to be modified, flattening the side slopes from 2:1 to 5:1 to minimize caving. The machines worked for weeks and made several passes, departing from their usual single pass practice, before they got through

Left below: Front-mounted cutter was made on job of 1-in. by 12-in. plate. Right below: Caterpillar swings a Fleco brush rake.

this section. There were several narrow escapes when the biggest dragline slipped off its supporting mats, but the machine was recovered.

One of the big jobs in connection with this contract was the clearing not only of the channel area but the 1,000-ft. floodway, which Bureau of Reclamation engineers provided alongside the channel. The entire area was well grown up in bosque, including in some cases cottonwood trees to 16 inches in diameter. Measured by any standard this represented a first class clearing job.

Drag Knife Proves Successful

Many methods were used with varying degrees of success. The big cottonwoods, of course, dropped readily when McCullough chain saws were brought in. But the area was much too big to attempt any clearing by hand methods. Some better system was needed, particularly to clear and remove smaller, deep-rooted trees. McGinnes experimented with a pointed toothed instrument mounted on the front end of a tractor, similar to that which was used on cottonwood trees at Boysen Dam in Wyoming several years ago. It was not too successful. A pointed knife mounted on a V-type frame was then used on an Allis-Chalmers HD-20 tractor. This worked better. When a heavy drag knife, reaching down about three feet into the ground to snip off tap roots, was added, everybody was satisfied. This machine did the job in excellent shape and was able to clear several acres per hour. It saw extensive use, and with the help of other tractors equipped with Fleco grubbing rakes and dozer blades was able to keep out ahead of the draglines. As the brush was cut, it was piled by tractors. Later, after it had dried, the brush was burned.

Shortly before McGinnes Bros. finished work on March 19, 1953, the Bureau advertised for another 14 mile job along similar lines in the next upstream section. List & Clark Construction Co. of Kansas City, Mo., were low bidders at a contract price of $769,829. The job was similar to McGinnes Bros. work in that a 2,000-cubic-foot-per-second channel was provided, but there were additional features included in the upper job. For example, the floodway was 1,400 feet wide, and was designed for a peak flow of 50,000 cubic feet per second. List & Clark's job also included construction of a heading structure of 2,000-cfs capacity. This structure included a concrete headwall with screw-type lift gates. The heading structure will make possible the training of efficient hydraulic flows into the new channel.

Clearing methods on the List & Clark job were similar to those used previously by McGinnes Bros. because extensive experimenting had been done by that time, and construction-wise managers quickly saw what would work and what wouldn't. The excavation job was also similarly handled, using a Model 4500 Manitowoc dragline and a Northwest 80-D dragline for secondary work.

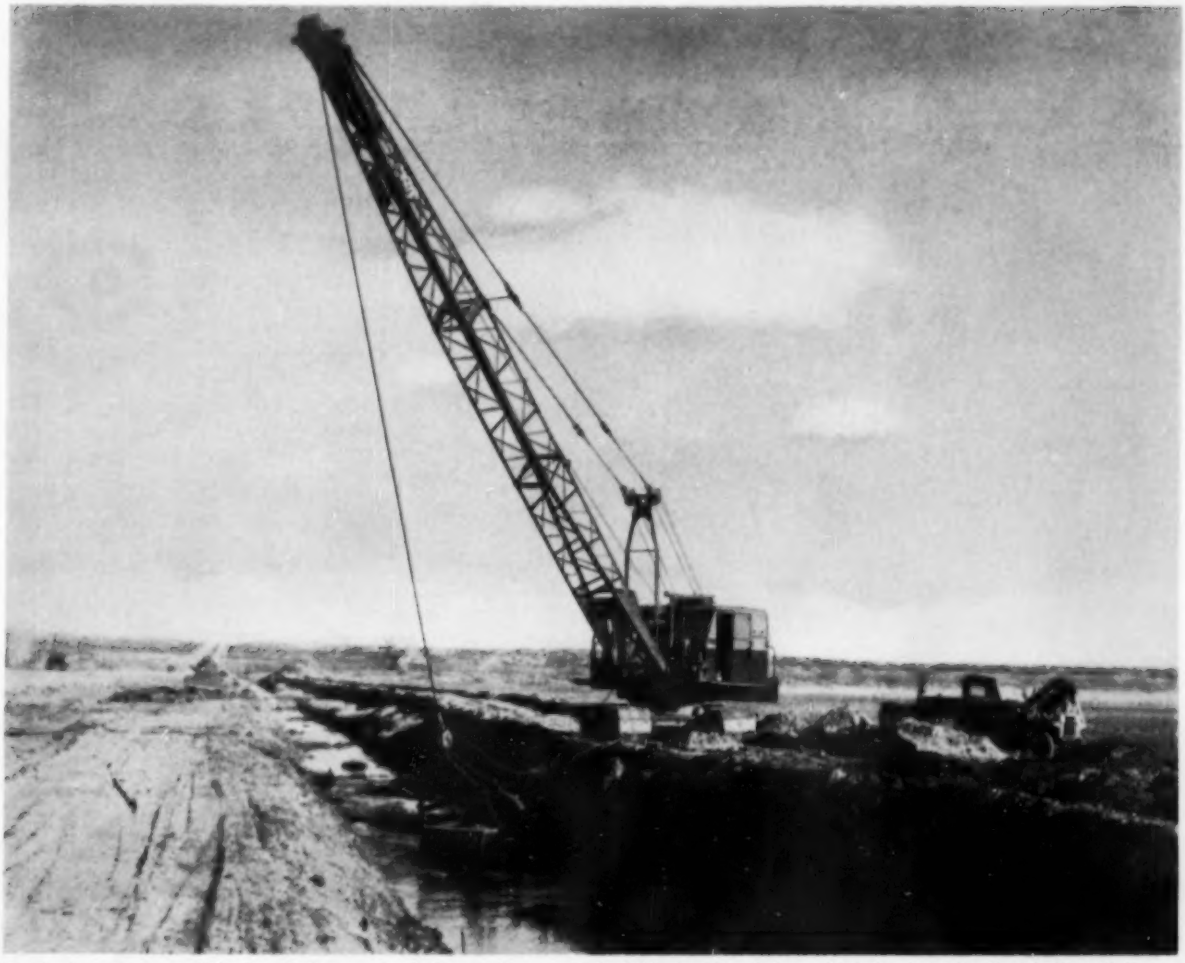
Footing was considerably more sound on the upper contract, and it was rare where mats had to be used. Also, it was possible to build better access roads into the area. Such roads led east from U. S. Highway 85, which runs south from Albuquerque to Socorro. Channelization work now is essentially complete, and with adequate maintenance in the future should improve the hydraulic efficiency of the Rio Grande for many years to come. All told, approximately $2 million was spent on the channelization construction.

Drainage Rounds It Out

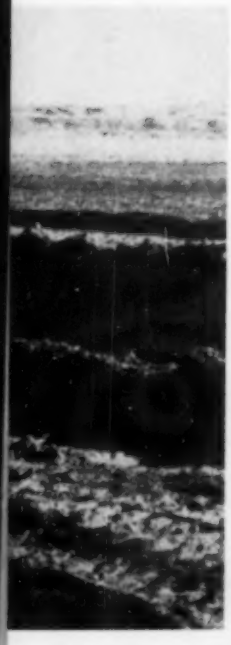
Important as the channelization work was, Bureau engineers knew the project would not be complete without an extensive rehabilitation of its entire drainage system from Albuquerque south through Belen, Socorro, and on to the reservoir itself. Approximately 160 miles of riverside and interior drains were in bad condition. They were silted up as deep as six feet above the original grade line. Their sides, and in some cases their bottoms were choked with dense growth of salt cedar and willows. For all practical purposes they were useless.

This drainage system had been designed originally to remove excess water applied through the normal process of

Important item was clean-up because operating crews must have access to the channel. A Vega Caterpillar grades the ditch road.



Hard at work on an interior drainage canal, Vega's Bucyrus-Erie 38-B dragline brings ditch back to its first-built efficiency.



Half the battle on many jobs is equipment maintenance. The Vega master mechanic puts a McCullough chain saw in tip-top shape.

Above: The McGinnes Brothers Bucyrus-Erie 54-B dragline widens pilot trench to full 32-ft. width. Right: The Manitowoc 4500 dragline dumps dirt to levee embankment.

irrigation. When the drainage system choked up and silted, the excess water—which usually is left over in any irrigation program—could not get away from the land. And since it couldn't get back to the reservoir through the bosque area, it was useless to the river system and a threat to agriculture in the region.

Drainage Important

As this is written, approximately $887,000 worth of drainage rehabilitation has been completed out of a total $1,271,000 program. Ten separate contracts, ranging in size from $41,000 to $303,000, have been let for clearing, cleaning, and reshaping of drainage ditches, the repair of bridges, installation of corrugated metal pipe culverts, and minor repairs on structures. The work is designed to put the drainage system back in first class operating condition, so that excess water once again can be trained into Elephant Butte Reservoir for use downstream.

Every one of the drainage contracts has been a mean, sloppy job, not without many problems. But in a sense they were also typical, possibly because of the presence of similar problems in each of the jobs.

Typical of the present drainage contracts is the second largest; a $256,000 USBR contract held by Vega Engineering & Grading Co. of Berkeley, Calif., bringing the firm's share of this work to $563,000 including two jobs completed in 1954. Vega's work, which is currently in progress and is expected to be finished before the end of the fiscal year, June 30, 1955, calls for rehabilitation of about 44 miles of drains between San Antonio and San Acacia, New Mexico. The work covers 11 drain ditches, ranging in length from 3,100 to 31,700 feet long.

In every case, the ditches were in bad shape. Up to six feet of silt were present. The sides, berms, access roads, and in some cases the bottom of the ditch were badly grown up. Bosque ran rampant. The job included construction of

the drainage ditches under several canal crossings, construction of drain inlets, road crossings, and the replacement of several old timber boxes with modern asbestos-bonded Armco corrugated metal pipe. The plans also called for clearing of a bank and berm area, 35 to 60 feet wide on each side of the ditch center line.

Clearing was much more complicated on Vega's drainage job than it had been in some of the more accessible parts of the floodways. One thing which complicated clearing enormously was the presence of bosque on the drainage ditch slopes. It was impossible there to move in with the type of tractor equipment which proved so successful on the floodway contracts. After considerable experimenting, Vega found the best solution to the side slope problem was a Hall-Holmes mechanical brush cutter mounted on a Caterpillar D6 tractor. The Hall-Holmes brush cutter has a hydraulic jib mounting, which permits the reciprocating cutter blade to be moved to a number of different positions. This machine was especially effective on brush up to about four inches in diameter.

For flat clearing work, Vega used a Towner brush cutter, also mounted on a Caterpillar D6 tractor. These two machines were assisted by three other Caterpillar tractors with dozers, which stacked brush for burning, did dozer work, and built the necessary pioneer roads so that excavating equipment could move in and clean the drainage ditches. A Caterpillar No. 12 motor grader also was used, especially on construction of the access roads.

Ground near Elephant Butte reservoir was so mucky that pressure from levee at left caused center of channel to rise five feet for short distance. Mats were required.

The big excavation job of digging out and reshaping the drainage ditches was handled by three rigs: a Bucyrus-Erie 38-B carrying a two-yard Hendrix bucket on a 65-ft. boom, a Lorain Model 79 dragline with a two-yard bucket and 55-ft. boom, and a Lorain 41 dragline with a one-yard bucket. The latter machine was used chiefly for structure excavation. Approximately 70% of the excavation job was handled by the 38-B which worked on a double shift basis between September 15, 1954, and February 3, 1955.

Progress of the draglines was hard to pin down, chiefly because of varying characteristics of the drainage ditch operation. There were peak days where the 38-B cleaned and reshaped 3,000 feet of the shallow cut areas of the largest sized drainage ditch during its 16-hour double shift, but there were also other times when the footing was bad and there was more muck to move. At times three complete passes were necessary, with a reasonable period between to allow the bottom and banks to stabilize. The third pass, by under-cutting an average of one foot, brought these areas to design grade. Excavated material was cast to one side and used for the strengthening of the levee along one side of the ditch.

Radio Saves Money

Vega operated from a base office in Socorro, and coordinated field operations very closely by the use of Motorola two-way radio transmitting equipment. Three Motorola stations were mounted in various 4-wheel drive pickup trucks. There was also a central station in the Socorro office. Breakdowns, the movement of equipment from one place to another, payroll information, progress reports, and other routine matters were

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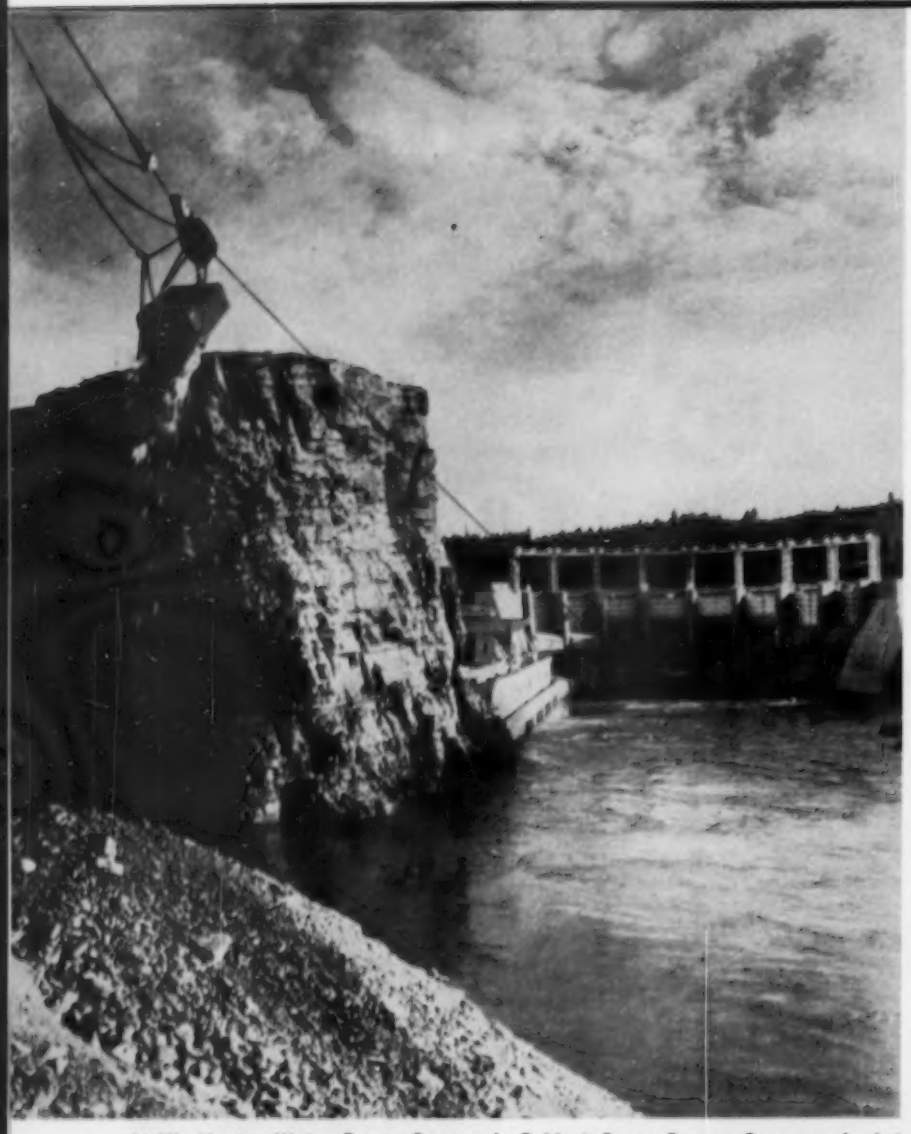


At Washington Water Power Company's Cabinet Gorge Dam, a Sauerman bucket spills 2½ yards of rock. Excavator takes material from area in front of discharge.

How to De-Rock a Tailrace

Cabinet Gorge Dam rises 208 feet between almost vertical rock cliffs in the Clark Fork River. Here's how the private power company owners keep the tailrace free of rock accumulation.

THE Washington Water Power Company's Cabinet Gorge Dam and Power Plant is located on the Clark Fork River, a half mile west of the Montana-Idaho State Line. The plant was designed by Ebasco Services, Inc. and Morrison-Knudson Company, Inc. was the prime contractor.

When construction on the dam and powerhouse was completed, an accumulation of rock remained at the discharge of the draft tubes. The rock had to be removed to insure an unobstructed flow for the tailrace.

A Sauerman 2½ cubic yard Slackline Cableway, equipped with a rapid shifting bridle system was selected to do the job. Approximately 28,000 cubic yards of rock varying in size from 6 inches to 5 feet have been removed since the slackline was installed. It is a permanent installation and will be used to clear the area in front of the draft tubes periodically as rock may accumulate during high water.

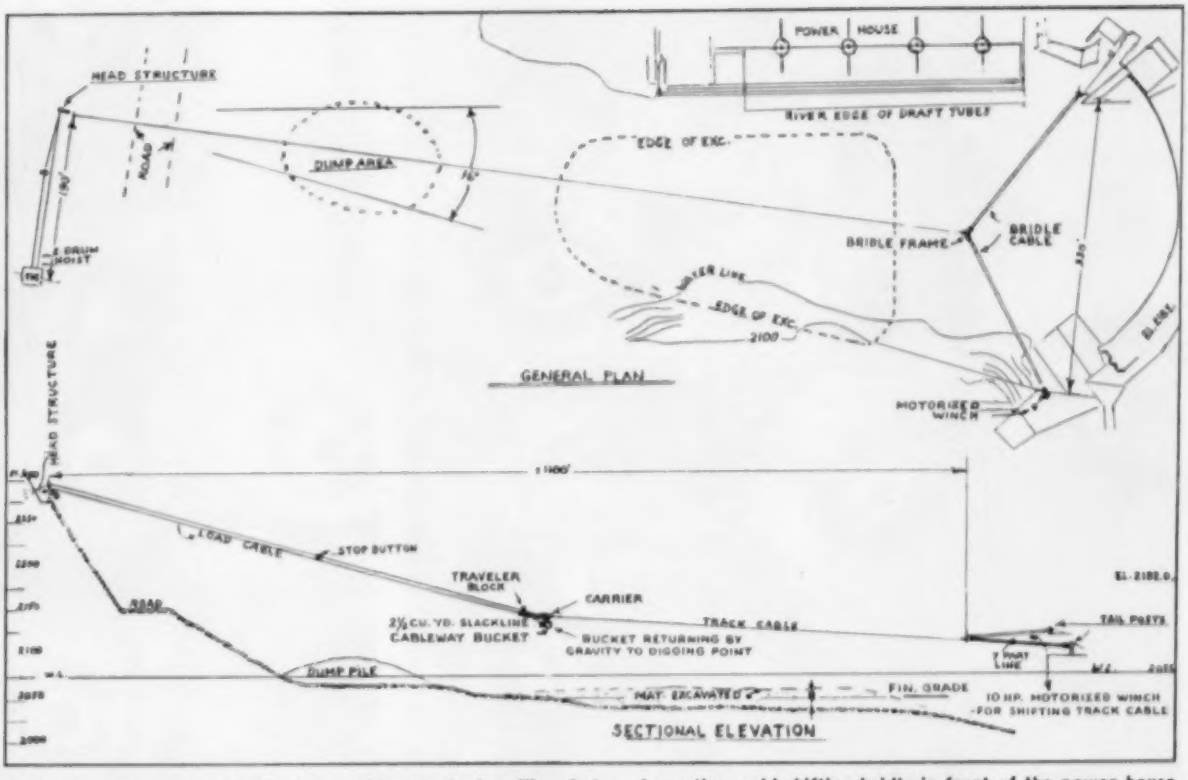
The slackline operates over a 1,000 ft. span from head post elevation 2,295 to tail mast elevation 2,108. Material is excavated from 35 feet of water and conveyed in the 2½ cubic yard bucket to the storage pile about 150 ft. below the tubular steel head mast. Power is supplied by a hoist located 190 ft. from the mast. The bucket and carrier assembly rides on a track cable; load cable is attached to chains at the front of the bucket. The track cable is reeved through a counterweighted triple-block and another plate type block as well as a standard Durolite block to form the proper slackline cableway mast rigging.

Another Durolite is mounted on the mast as a guide block for the load cable.

The lower end of the track cable is attached to the rapid shifting bridle frame. It is controlled by a 10-hp motorized spool type winch. The frame is moved by several parts of line supported between the two tail posts. The rapid-shifting device permits the bucket's line of operation to be shifted laterally as well as lengthwise. The area of excavation is wedge-shaped with the bridle cables representing the extreme width of operation and the pile, the focal point of the area.

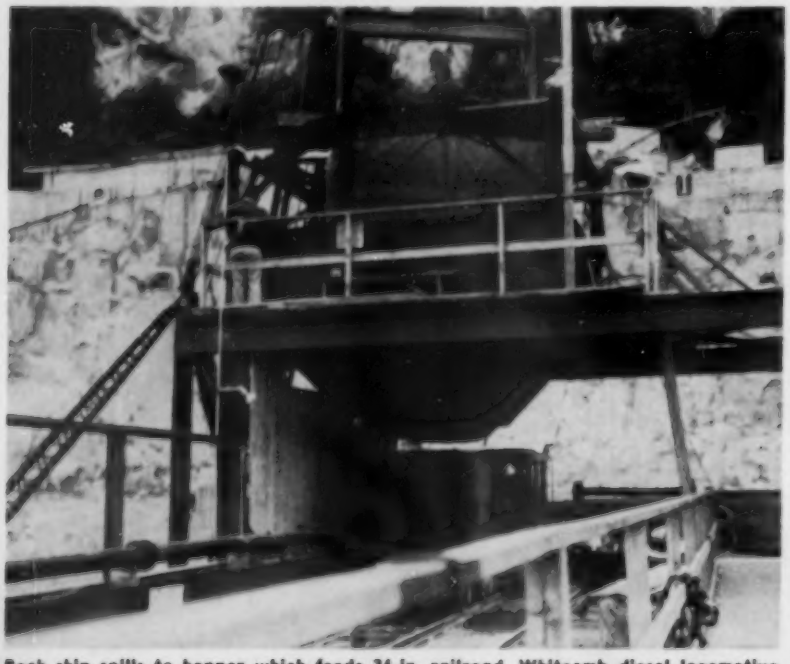
It is interesting to note that while the Sauerman Slackline Cableway is doing a tough job well for the Washington Water Power Company, the entire Cabinet Gorge project was considered a job that couldn't be done—but was. At the dam site, the Clark Fork River flowed 95 ft. deep between vertical rock cliffs rising over 350 ft. through a gorge.

In just twenty-one months after start of construction, the first 50,000 kilowatt generator was producing power. Present capacity consists of four 50,000 kw Westinghouse generators driven by 70,500 hp. propeller type Baldwin turbines, one of them a Kaplan unit. The 208-foot high Cabinet Gorge Dam has taken its place in the Northwest Power Pool . . . a pool with a capacity of more than eight million horsepower.



Above is a diagram of the slackline cableway rigging. View below shows the rapid shifting bridle in front of the power house.

Rock blasted from Palisades bluff section of tunnel moves from shovel to Koehring Dumpter to 8-yd. rock skip. American revolver raises pan to narrow gauge railroad.



Rock skip spills to hopper which feeds 36-in. railroad. Whitcomb diesel locomotive pulls side dump cars across bridge spanning a dozen or so New York Central tracks.

Combine D

DRIVING a 31-ft. tunnel more than a mile under the Hudson River at New York City is a construction job of classic proportions. Building one of these tubes has always been a long job requiring highly specialized tools and crew.

The forces presently engaged in providing a third tube for the Lincoln Tunnel between Manhattan and Weehawken, N. J., are no exception. They have been at the job a long time—since 1952

Bucyrus-Erie 22-B tunnel shovel mucks rock. Electric machine swings 14-ft. boom and 12-ft. 6-in. dipper handle to conserve space.

rives Third Tube to Weehawken

Talk about high cost roadway—it comes to $100 million a mile under New York's Hudson River. Harassed motorists will call it a bargain at twice the price. A trio of old hands wins contract.

—and they will be there a lot longer—probably until 1957. From the contracting partners on down to the muckers, all hands own a vital background of tunnel driving experience. Special tools for the job include such one-shot equipment items as a 540,000 lb. (fully equipped weight) steel shield.

The principal contract which covers driving the tunnel is now being fulfilled by capable, old hands. A joint-venture team called Mason Johnson MacLean won the under-river assignment on a low bid of $17,260,000 to the Port of New York Authority.

The three New York City concerns which have joined hands are Mason & Hanger, Inc., The Arthur A. Johnson Corp., and MacLean, Grove & Co. Incorporated. These are all well-known names in the tunnel field. Mason & Hanger, Inc., constructed the first two Lincoln Tunnel tubes. The original Arthur A. Johnson came over from Eng-

land in the 80's with Pearson & Sons, the British firm engaged to complete an early Hudson River crossing after American failures. The firm was one of the pioneers in the shield-driving technique. Johnson later founded the present firm. Serving as project manager for the joint venturers is Mansell L. MacLean, president of MacLean, Grove & Co. Inc. While this firm is newer than the other two, it is headed by a man of international reputation in the tunnel field, MacLean.

Two and One Scheme

The Lincoln Tunnel third tube is being driven parallel with the first two tubes and 100 feet south of them. It crosses the Hudson River on a line between King's Bluff in Weehawken and West 38th Street in New York City.

Completion of the third tube will give authorities a double-barreled weapon to use on mid-town traffic. Mornings, two tubes will be allocated to traffic moving towards Manhattan. One tube will handle the Jersey-bound vehicles at that time. Evenings, the plan will be reversed. Two tubes will direct vehicles to New Jersey; one to New York.

Although the tunnel driving process appeals most to the imagination, there are other important steps. Walsh Construction Co., B. Perini & Sons, Inc. and Peter F. Connolly Co. excavated the 61 x 110-ft. opening and 55-ft. deep shaft at the foot of King's Bluff. Tunnel headings were sent out from the shaft and it will later contain ventilating machinery. An overhead bridge spaning adjacent New York Central tracks was also built by Walsh. This bridge is mainly used to carry excavated tunnel material from shaft to haul truck. Another ventilating shaft on the New York side was excavated by the Gull Contracting Co., Inc., Flushing, L. I.

The stand-out operation, however, is still the Mason Johnson MacLean tunnel driving. The tunnel is divided into two principal parts. A short rock section 705 feet in length is driven westward from the King's Bluff shaft, under the Palisades bluff toward the Weehawken approach ramps and the river section driven to the east. A part of the river section will also be driven from the King's Bluff shaft, where the shield will be assembled, but the principal portion of this heading will be driven from a temporary construction shaft which will be subsequently constructed at the easterly

At east end of bridge, air actuated car dumper spills contents to chute which in turn loads Mack 10-wheeler rear dump truck.

Whitcomb locomotive pushes load of blasted rock across span. Before third tube of Lincoln tunnel is opened to traffic the total price of the job will near $100 million.

end of the bridge referred to above. The easterly tunnel heading will have a total length of 5,400 feet.

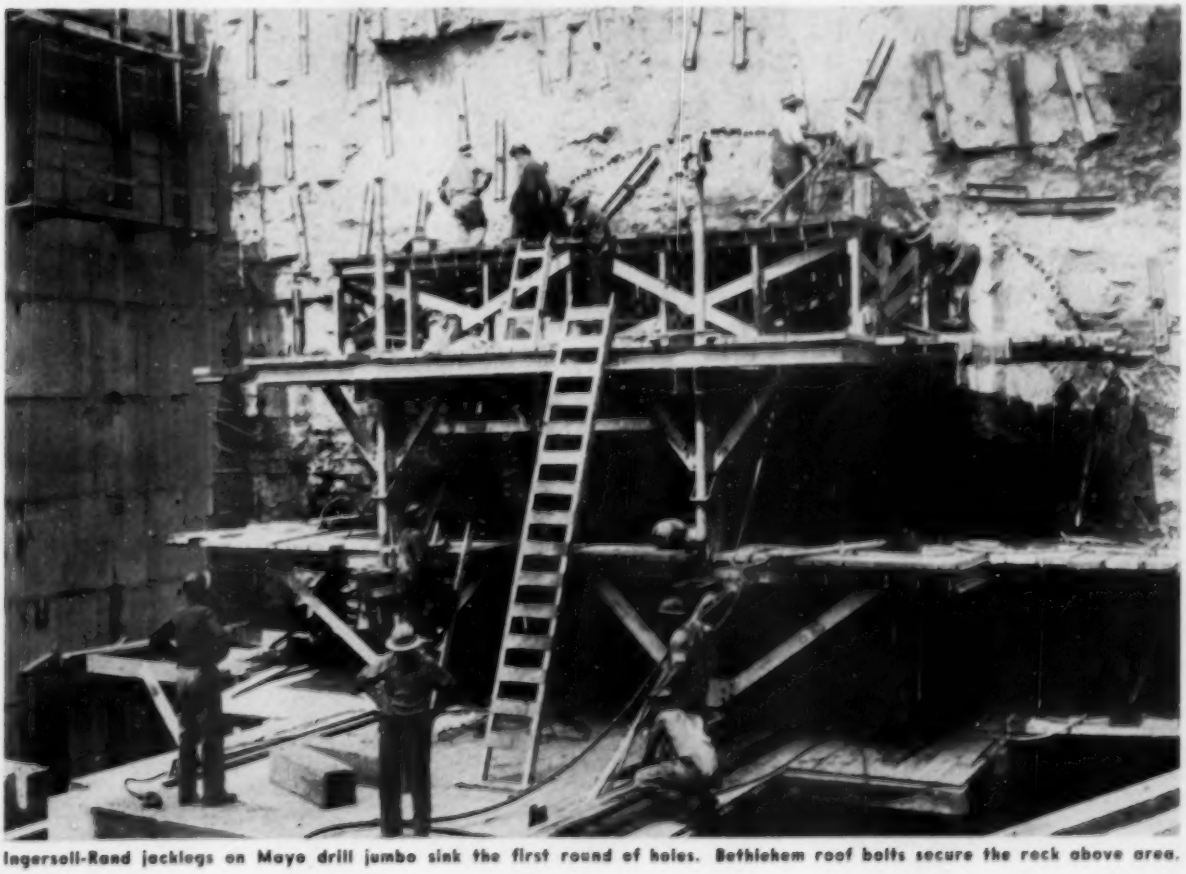
The section through the bluff is a rock tunnel. The face varies from shale to very hard Palisades trap rock. Bethlehem roof bolts are used above the portal to secure an area of bad rock.

Standard rock excavation methods are used to drive the bluff tunnel. Although a 34-ft. bore is excavated, it is not removed in a single pass. Only the material from the tunnel arch to 4 feet below the centerline is excavated. The 13-ft. bench is left until the partial tunnel is holed through. The bench will be excavated last.

Excavating the rock tunnel begins with blast hole drilling. Eight Ingersoll-Rand jacklegs mounted on a Mayo drill jumbo, made in Lancaster, Pa., sink either 118 or 135 1⅛-in. holes in the face. The tunnel is driven in 9 and 12-ft. rounds. To blast a 9-ft. round, 118 holes are drilled; for the 12-ft. round, 135 holes are drilled.

The crew loads an average 700-800 lbs. of DuPont 40% dynamite into the holes. The charge becomes as high as 950 lbs., but rarely.

The round is fired on a 220 volt circuit with a pull switch located at the tunnel portal. As many as seventeen delays wired into the shot direct the



Ingersoll-Rand jacklegs on Mayo drill jumbo sink the first round of holes. Bethlehem roof bolts secure the rock above area.

View from inside bluff section shows start of river section opposite. Breathing air is fed to workers through pipes at left which tap Lincoln tunnel ventilation system.

shot towards the center of the face. A V-cut towards the center is detonated first; then successive wedge-patterned shots throw material towards the center on a series of delays. Working three shifts over a five day week, the crews average two rounds per day. This means a lineal progress of 18 to 24 feet per day, depending on the size of the rounds.

Mucking blasted rock at the tunnel face is principally the job of a Bucyrus-Erie 22-B tunnel shovel. This machine is basically the manufacturer's regular ¾-yd. model adapted for tunnel operation. The 14-ft. boom and 12-ft. 6-in. dipper handle reduce the amount of room needed for the machine to work. Electric power supplied by a cable-fed 40-hp Century motor actuates the shovel without using tunnel air. The machine is equipped with a 1-yd. heavy duty rock dipper. Also used intermittently for clean-up on the mucking operation is an Eimco Rockershovel.

Take Rock from Hole

Shattered rock is loaded to two Koehring Dumptors. These 5¼-yd. end dumps carry the material to the portal where they dump to an 8-yd. rock skip. An American stiff-legged crane raises the skip to the bridge which crosses the dozen or so New York Central tracks. Here the load is fed into a hopper.

The bridge over the railroad tracks carries a 36-in. gauge railroad itself. A Whitcomb diesel powered locomotive shuttles narrow gauge side dump cars across the span. Once across the tracks, an air-actuated car dumper spills the contents to a chute which feeds into a haul truck. A rented Mack end-dump was on the job the day we saw the operation.

The truck spoils the material some 300 to 400 feet from the bridge into the Hudson River. It makes excellent fill in the development of badly needed land at the construction site. The engineers expect the small land reclamation project to provide capacity for all the waste material.

Eastward towards the river bottom is the direction of the second heading from the shaft at the foot of King's Bluff. This heading is being driven by the steel shield method.

The all-welded shield was manufactured by the American Locomotive Co., Schenectady, N. Y., under a contract to the Port of New York Authority, which is the buying party on the third tube project. Bare, the shield weighs 420,000 lbs. Mounting jacks and other equip-

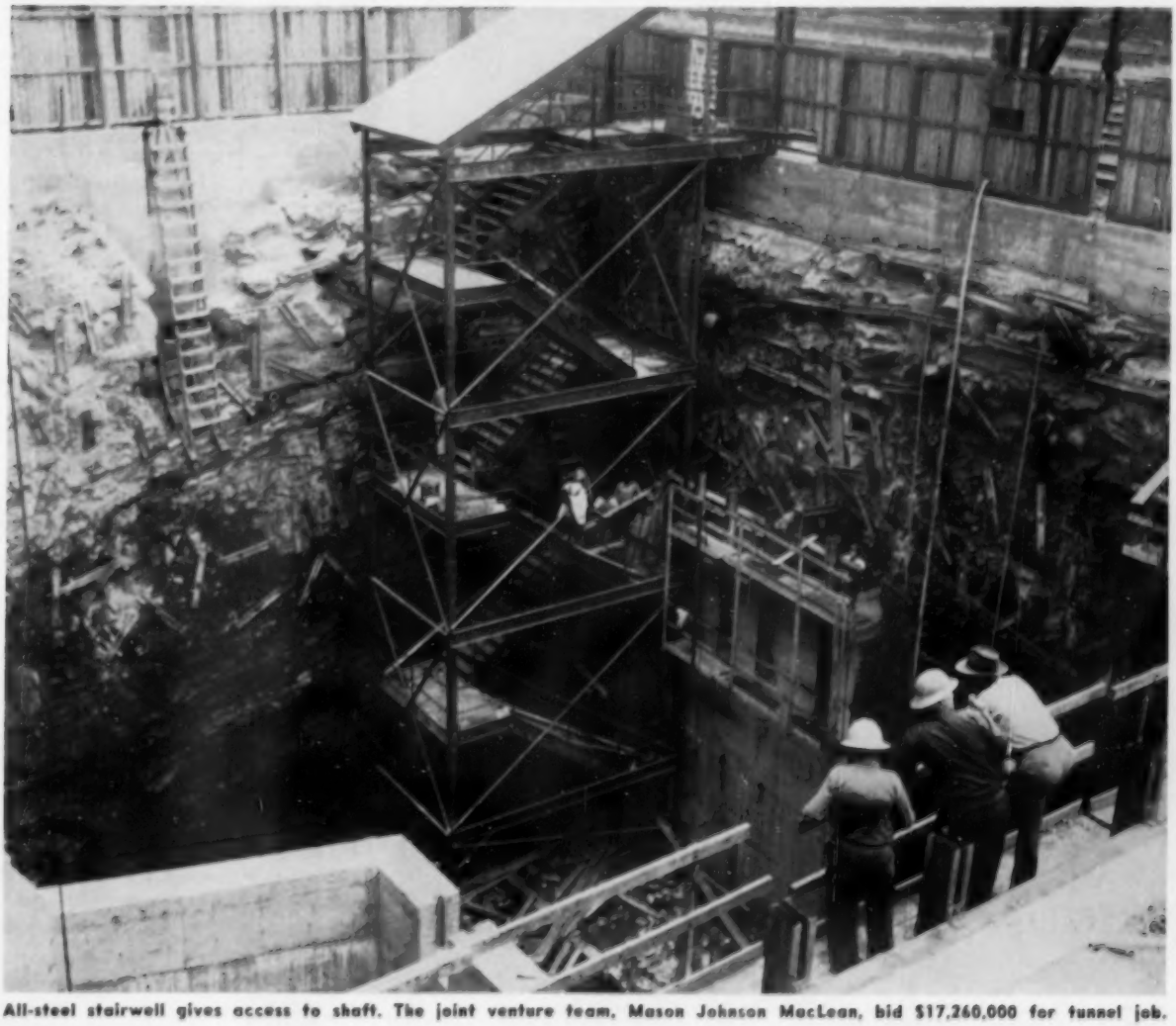
Until the American revolver crane was erected, a Manitowoc crawler-mounted crane helped around the King's Bluff shaft. Shaft will later contain ventilating machinery.

Project manager for the joint venturers who have the tunnel driving contract is Mansell L. MacLean, president of one of the trio, MacLean Grove & Co., Incorporated.

ment, it takes on another 120,000 lbs. of weight. Cost of this piece of equipment, which will be used only this one time, is $232,767.

In principle, the shield is like a tin can with one end cut off as happens with a modern can opener. The 31-ft. 8-in. O.D. shield is jacked along, closed end forward, in the silt and mud which forms the river bed. At the tail end of the 18-ft. 4-in. long shield, men bolt the cast iron or steel tunnel segments together to form the tunnel lining. Workmen bolt 14 segments and a key together to make up the complete 44,000-lb. circumference. An erector arm, an accessory to the shield, places the heavy sections.

The segments, which are a product of the Bethlehem Steel Corp., are 32 inches wide. Thus when a ring is completed, the tunnel has advanced 32 inches. The joint venturers hope to average 32 feet per day although there are



All-steel stairwell gives access to shaft. The joint venture team, Mason Johnson MacLean, bid $17,260,000 for tunnel job.

days when they will complete as many as 16 rings. Six days is the standard work week.

Shield Moves Forward

As the shield is jacked forward under the pressure of 28 hydraulic jacks, each capable of exerting a 200-ton thrust, it leaves behind it a continuous 32-ft. diameter tube. Jacks push against the last assembled ring and shove the shield forward just enough to make room for one more ring.

A bevelled cast steel cutting edge around the circumference of the shield's closed end helps slice through the river bed. The forward end of the shield is not truly closed. There are openings through which a percentage of river silt is taken in.

Approximately 20% of the material displaced by the tunnel is taken in through the front end and left on the completed tunnel floor. This is done to ballast the tube resisting its tendency to rise. The remaining silt is displaced through the force of the shield. A narrow gauge railroad system serves tunnel muckers to carry in materials. Muck which has been deposited in the tunnel will be removed when the tunnel has been connected up at the New York side. There is then no longer a danger of the tunnel rising.

Unloading structural steel from semi is Bucyrus-Erie 38-B crawler which takes on lifting jobs anywhere in the yard. A 540,000-lb. shield is biggest single tool on job.

Where the heading leaves the Jersey shaft, the material is shale which changes within 200 feet to silt. The same transition takes place on the New York side. A short section was taken out by conventional hard-faced methods. A concrete cradle for assembling the shield and starting it forward was built in this heading. As shield driving began, a concrete bulkhead was built across the portal to seal off the tunnel. Locks for the men and for the narrow gauge railroad were cast into this bulkhead. It was necessary to seal off the tunnel, of course, to contain the compressed air under which the tunnel is driven. Compressed air keeps the river from seeping into the tube. The crew placed these concrete structures with the aid of a 6-in. Pumpcrete.

To be expected is the battery of pumps and compressors housed in a 50-ft. by 120-ft. Luria Bethlehem Steel building on the construction site. Here we find four "low air" 5,000 cfm Ingersoll-Rand compressors powered by 325-hp General Electric synchronous motors. These machines supply air to the men in the shield with a range in capacity to 50 lbs. psi. There are two "high air" 1,320 cfm Chicago-Pneumatic compressors powered by 250-hp General Electric synchronous motors and three Joy compressors powered by 125 and 150-hp electric motors. The total "high air" capacity is approximately 5,000 cfm @ 125 lbs. psi.

Two Aldrich pumps supply water under pressure to the shield jacks. Each pump is rated to supply 24 gpm of water at up to 6,000 lbs. psi. One hundred horsepower Louis Allis induction motors turn these pumps.

In the system, an air tank and hydropneumatic accumulator keep the pressure even and free from fluctuation. The high pressure water reaches the jacks through 1½-in. double extra heavy steel pipe which will eventually have to span the Hudson River.

Because electric power failure might prove disastrous during construction, the builders take precautions to prevent this happening. Three independent feeders come in to the construction site. The initial voltage coming from the Public Service Electric and Gas Co. of New Jersey is 4,160. This is stepped down to 2,300 volts, 440 volts, 220 volts, and 110 volts as required.

A special breed of man works in the tube and he works under special regulations. Popularly called sand hogs, these men engage in a dangerous occupation

and no expense is spared to reduce the danger. A complete medical clinic housed in a 55-ft. by 60-ft. building supervises their selection in the first place and their care until the job is completed.

In the clinic are complete medical facilities as might be found in a small hospital. The clinic contains a medical lock or compression chamber which is capable of developing a maximum of 70 lbs. of atmospheric pressure in about five minutes and is used to test potential workers and to treat "bends."

Bends Precautions

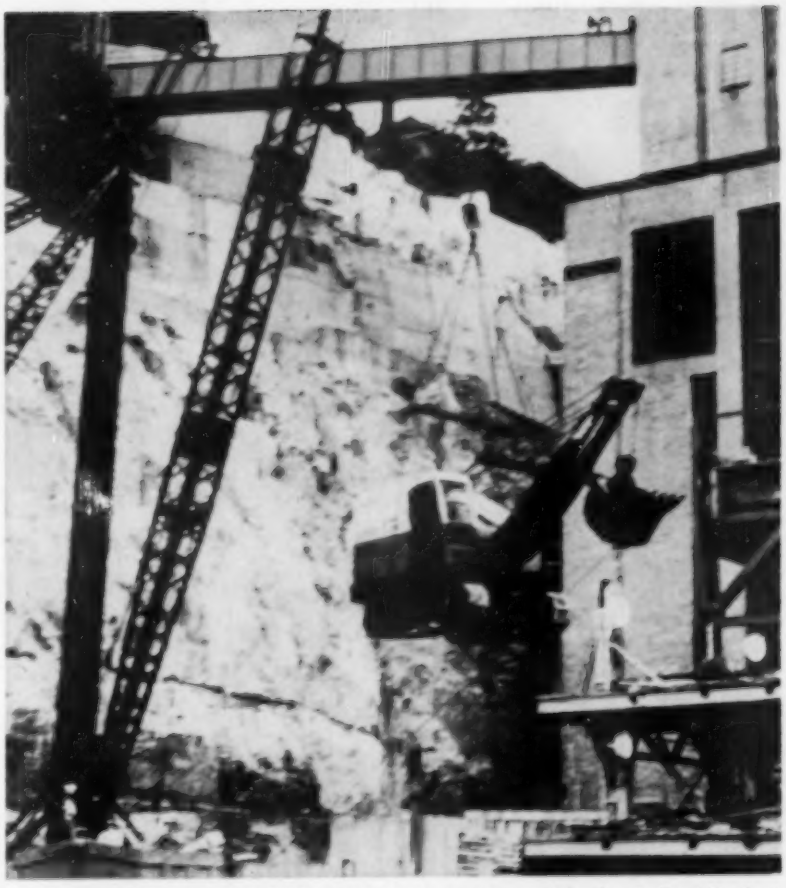
A crew of 200 under-river workers is needed to maintain continuous operation six days per week. These men are carefully screened. Away from the job, each wears a pin which supplies information to strangers in case the wearer should lose consciousness or show symptoms of the bends. The pin tells the address and telephone number of the Weehawken job site medical clinic. The bystander is advised to drive the ill pin wearer to the site immediately for treatment in the chamber or to telephone if no transportation is available.

The working hours of the sand hog are rigidly governed by the pressure under which he labors. At 15 lbs., he works three hours, rests three hours and works a final three hours to complete his six-hour shift. Rest and work periods change under higher pressure. A staff of five physicians and three nurses at the clinic enables it to be manned at all times during the six-day work week.

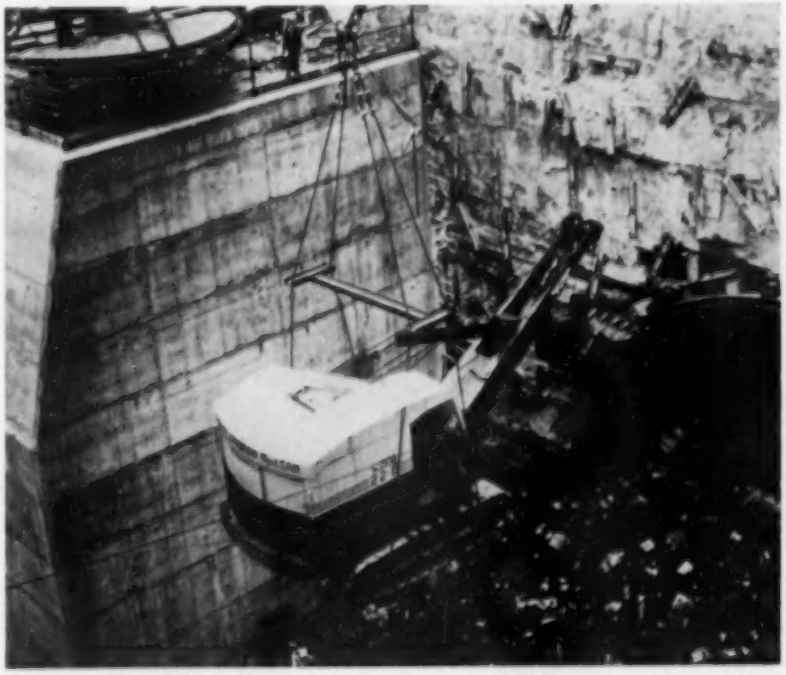
Another decompression chamber of 40-man capacity will be cast into the 10-ft. thick concrete bulkhead at the tunnel portal. This will be for the routine decompression of workers leaving the tube. Rule of thumb decompression scale is one minute per one pound over normal atmospheric pressure. Although the men will never work under a 70 pound pressure available in the clinic chamber, it is necessary for treatment. In treating bends, the patient must be subjected at first to twice the pressure under which he has been working.

The 31-ft. OD cast iron tunnel when completed will be lined with concrete, a job which will require 42,000 yards at a rate of 6½ yards per lineal foot of tunnel. A 15-in. thick roadway will encase 10-in. steel beams set on 21-in. centers. Curb to curb, the roadway will be 21-ft. 6-in. wide to provide two 10-ft. 9-in. lanes. The ceiling when it

Continued on page 64



Here's how the Bucyrus-Erie 22-B tunnel shovel went to work in the shaft at the foot of King's Bluff. It was hitched up to the boom of the American revolver crane.



Then the 22-B shovel was swung down into working position at the rock tunnel face. Excavation varied from shale to very hard Palisades trap rock through this section.

News from the Field

Record Contracts

The Dodge Reports total in January for contract awards for future construction in the 37 states east of the Rockies emphatically set a new all-time high for all Januarys in the 64-year history of F. W. Dodge Corp.

The total of $1½ billion was 31% ahead of the figure for January, 1954, which set the all-time January high mark up to last month. Dodge's January total is watched with special interest each year because the projects reported will be in process of construction over the weeks and months ahead and represent firm commitments for the expenditure of enormous amounts of money. The January total a year ago foreshadowed 1954's record-breaking construction figures in both the Dodge and the government figures.

AED Officers

Associated Equipment Distributors, the national trade association of the construction equipment industry, installed 1955 officers and directors at a traditional Installation Luncheon in the Grand Ballroom of Chicago's Conrad Hilton Hotel. The installation was part of the business activity of AED's 36th Annual Meeting, held in Chicago, Jan. 23-27.

Distributor members at the convention's third business session elected six officers to serve one-year terms. Following is a list of 1955 officers: President, Ray J. Finn, Bode-Finn Co., Cincinnati, O.; Executive Vice President, S. F. Laskey, Northwestern Equipment Inc., Fargo, N. D.; Vice President, L. Miner Doolen, Telford Equipment Co., Lansing, Mich. (Second term); Vice President, H. D. Anderson, Rish Equipment Co., Bluefield, W. Va.; Vice President and Director of Region XV (Canada), M. F. Macdonald, F. H. Hopkins & Co., Ltd., Montreal, Quebec, Canada; Treasurer, F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass. (Third term).

Brown & Root to Pakistan

A cadre of technicians from Brown & Root, Inc. in Houston is preparing to leave this month for West Pakistan where the Texas construction company has a contract in excess of $3 million on a large dam and irrigation project.

The Taunsa Barrage, as the project is called, is one of the largest public projects undertaken by the young republic. It is located in the state of Punjab, with only the lofty Himalayan Mountains between the site and the Iron Curtain to the North.

The Brown & Root contract is to engineer and construct 64 Stony-type gates and operating equipment for the dam. All the structural steel and castings for the gates will be bought in the United States and sent to Pakistan. There Brown & Root will set up a model steel fabrication plant where, with Pakistinian engineers and laborers, the gates will be fabricated and erected. Training of the native craftsmen is part of the contract. The plant will be in the city of Bahlwal.

Atkinson Birthday

Three hundred and fifty celebrants from across the nation gathered in San Francisco on the 15th of January to honor Guy F. Atkinson, internationally-known construction pioneer and chairman of the Guy F. Atkinson Co., at a testimonial dinner held in the Sheraton-Palace Hotel.

The event marked Atkinson's eightieth birthday and his sixty-fourth year in the construction engineering field.

High point of the occasion was the unveiling of a portrait of the octogenarian painted by the Hillsborough (Calif.) artist, William Holt, a grandnephew.

Speaking on his philanthropic activities, M. D. L. Fuller, a San Francisco attorney, told the part Atkinson plays as director of two foundations bearing his name. The foundations are dedicated to the support of hospitals, churches and schools—providing funds for both scholarships and maintenance.

Flying from Tokyo for the affair was a grandson, Duane Atkinson, who presently is one of the supervisors of dam construction in Japan for the firm. (See "Japan Promotes Hydroelectric Power"; *Excavating Engineer*, March, 1955, page 20.)

Dravo Gets Piers

A Pittsburgh construction firm has been awarded the contract to build four huge piers for the new Mississippi River Bridge linking New Orleans and Algiers, La.

The Contracting Division of Dravo Corp. was low of five bidders for the project with a bid of $6,691,590 to the Mississippi River Bridge Authority at New Orleans.

The bridge is of the cantilever type with a 1,575-foot main span over the river. This span will be the largest of its type in the U. S. and third largest in the world. The largest pier, the only one actually in the river, will be as high

Continued on page 42

Contractor Kenneth Hunt of Loveland, Okla., reclaimed 35 acres of wasteland in 5 days with his International TD-14A crawler and bulldozer on farm in Tillman County.

STILL 1st ... IN DIESEL TRUCK SALES

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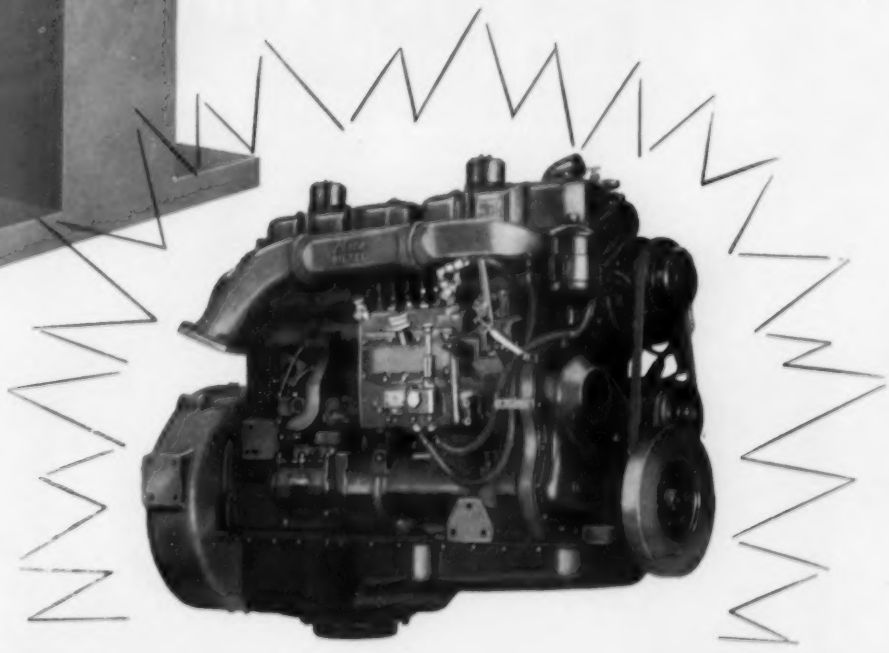

FAMOUS MACK THERMODYNE® DIESEL —renowned among leading fleet operators for its amazing fuel economy, powerful performance, and freedom from down-time.

During 1954 operators again bought more Mack diesel-powered trucks than any other make.

What's more—for '54 Mack earned an even larger share of the market—30.74% of all diesel truck sales—every year a greater share than the year before.

The reasons for Mack's increasing diesel sales and continued top-ranking position are not hard to find. Throughout the nation, operators—large and small—hail the unrivalled fuel economy, reliability and efficiency of the Mack Thermodyne Diesel engine.

No other engine introduced in recent years has met with such enthusiastic owner preference. No other engine gives such big savings in more miles per gallon, less down-time and stand-out performance. A worthy inheritor of the famous Thermodyne name, this great diesel has surpassed even the highest expectations of its manufacturer.

Ask any user of the Mack Thermodyne Diesel. His experience explains why, more and more, the swing is to Mack.

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To see this great machine in action on your job, call your INTERNATIONAL Industrial Power Distributor today. See for yourself what this great new machine can do for you.

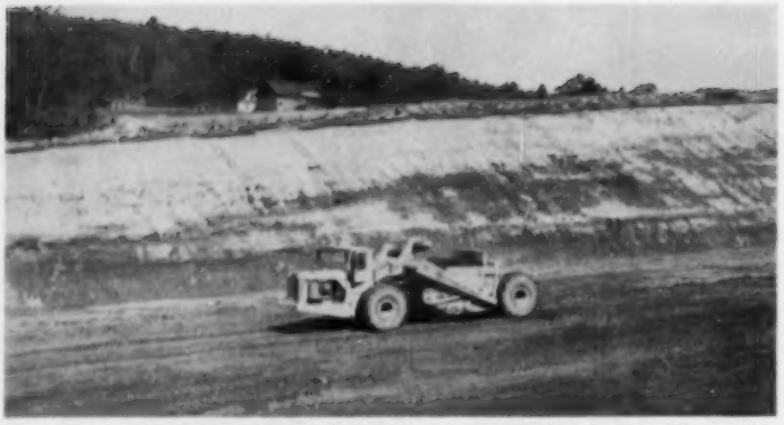
INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

Continued from page 38

as a 34-story building with more than half of it under water.

To construct this pier, called No. 2, a floating steel caisson 151 feet long, 88 feet wide and 20 feet deep will be used. Concrete will be poured into the caisson to sink it some 180 feet below water. At the point this pier is to be built, the water is 70 feet deep.

According to the contract, the pier project completion time has been set at 670 calendar days. The new $65-million Mississippi River Bridge construction program is needed to serve expanding residential and industrial areas.



Here is one of 10 LeTourneau-Westinghouse Tournapulls that Yonkers Contracting Co. uses for excavation of 3 million yards over 10.83-mile job on Maine Turnpike.

BM Films Are A Hit

Attendance at group showings of motion pictures produced by American industries in cooperation with the Bureau of Mines totaled 12,458,000 in 1954, an increase of 484,644 over 1953, a Bureau report states. Viewers of telecasts of the films are estimated at another 42.5 million, nearly 35 million above the estimate for 1953.

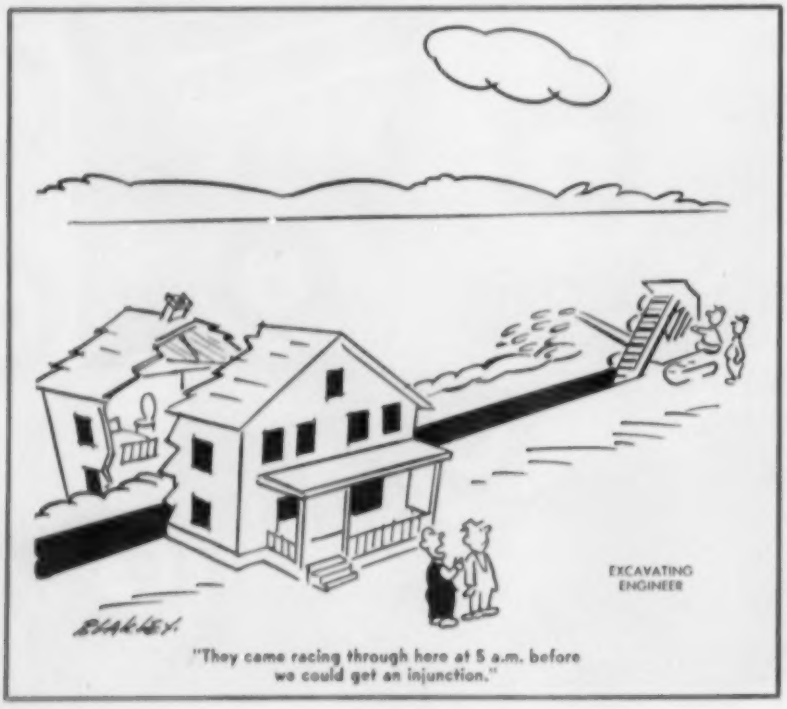
The films were shown 210,207 times by schools, civic groups, industrial firms and various organizations. This was 441 more showings than in the preceding year.

Private firms or industrial organizations underwrite all costs of producing these films and of providing copies. The Bureau distributes the prints from its Central Experiment Station at Pittsburgh, Pa., and through sub-distributing centers maintained by land grant colleges, universities, libraries and other public institutions in 39 States and the Territories of Alaska and Hawaii.

All of the films are produced by commercial film companies under contract to the cooperative industrial concern. The standard agreement between the Bureau and sponsoring companies requires credit lines in the beginning and end titles of the films, but does not permit the use of trade names nor any other material in the film that might be construed as advertising.

During the past year, four new films were in production under this cooperative arrangement—one of which, a remake of "Texas and its Natural Resources," was completed. Altogether, 63 film subjects, with a total of more than 6,000 prints were in circulation during the year. All of these prints are 16 mm sound, most of them in color.

Among the most popular films in the Bureau's free loan library in 1954 were those dealing with the natural resources of various States. Other leading films from the standpoint of frequency of showings were "Sulphur," "The Drama of Steel," "A Story of Copper," "Evolution of the Oil Industry," "Story of Gasoline," "This is Aluminum," and "Bituminous Coal."



"They came racing through here at 5 a.m. before we could get an injunction."

Publish Coal Analyses

Published records of coal analyses used by the federal government in awarding coal-purchase contracts are brought more nearly up-to-date with issuance of a Bureau of Mines report.

Fourth in a series, the report contains analyses of 11,435 samples of coal, collected during the fiscal year ending June 30, 1953, at mine tipples and from shipments delivered to Federal departments and institutions. These analyses enabled the Government to award coal-purchase contracts on a guaranteed-quality basis, and to make price adjustments on shipments that fell below contract quality.

The Bureau of Mines maintains an open file of analyses at Washington, D. C., for the benefit of Government purchasing agents, industry, and the public. It also publishes the information as rapidly as possible so as to make it more readily available to distantly located companies that have no Washington representatives.

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Equipment You Ought to Know About

Hopto Back Hoe

Manufacturer: Badger Machine Co., Winona, Minn.

Claims: Called the Hopto Model 185 SPR, the new machine is a standard Hopto Digger mounted on a rubber-

tired carrier and is Badger-built in its entirety.

The Hopto 185 can dig approximately 11 feet deep and is available with buckets from 8 to 36 inches in width. Swing of the unit is a full 180°. Hydraulic outriggers are built into the machine as an integral part. Individual operation of the outriggers permits the operator to level the unit from the carrier seat. The Hopto Model 185 SPR is powered by a Continental 226 water-cooled engine.

New Roebling Rope

Manufacturer: John A. Roebling's Sons Corp., Trenton 2, N. J.

Claims: Developments in wire manufacture and rope fabrication now permit Roebling to announce a new line of wire ropes, with steel cores, having 15% greater strength than the strongest grade marketed heretofore.

In the past, one of the obstacles to rope of higher strength was a proportionate decrease in other qualities as the strength went up. The new rope has higher resistance to wear from bending and abrasion. Laboratory tests as well as on-the-job observations, over several years, have proved these facts. Consequently, the new rope not only has higher strength, but will also deliver longer rope life.

The new rope will be manufactured primarily in preformed constructions. It will be a great boon to manufacturers of drilling and excavating equipment. It will allow the handling of heavier loads for longer periods, as well as the drilling of deeper wells. Because of its general ruggedness it will also last longer in logging operations.

The higher strength rope will be obtainable in rope sizes ranging from ¼ in. to 3½-in. Industries that will benefit will be those which use a wire rope with independent wire rope core, such as construction, oil, logging, mining, manufacturing and marine. The new ropes are for use on shovels, draglines, wagon-scrapers and the entire gamut of earth-moving equipment, rotary rigs, cat arches and chokers, slushers and mining machines, hot-ladle cranes and dredges.

"King-Size" Dynamite

Manufacturer: Explosives Department, Hercules Powder Co. Inc., Wilmington, Del.

Claims: New "King-Size" dynamite cartridges are now commercially available in four lengths, and small diameters.

The commercial production of the new time- and labor-saving "King-Size" cartridges has been made possible through the design and development by Hercules of a new machine for packing these cartridges in small diameters.

All Hercules cartridges are now available in these lengths: 24-in., 20-in., 16-in., and 12-in. The diameters are: 1¼-in., 1½-in., 1¼-in., and 2-in. The conventional 8-in. cartridge will continue to be available.

These cartridges make possible more uniform fragmentation in the deeper blast holes which are being used in mining, quarrying, and construction. The new cartridges effect substantial savings in time and labor in loading blast holes.

Medium-Diameter Rotary

Manufacturer: Bucyrus-Erie Co., South Milwaukee, Wis.

Claims: A rotary blast hole drill for putting down medium-diameter holes is now offered by Bucyrus-Erie, complementing the firm's broad line of rotary, churn-type, and jet-piercing blast hole drills. The new Model 40-R is designed along the same lines as the larger 50-R, the first rotary machine capable of drilling 12¼-in. diameter blast holes.

The 40-R is available with electric or Diesel-electric power and is equipped to drill 6¾- to 9-in. diameter holes. The crawler-mounted drill incorporates such outstanding design features as hydraulically powered down pressure on

the bit for maximum controlled penetration; Ward Leonard electric control for rotation of drill pipe; for propelling, and for hoisting and lowering of derrick machinery; continuous drilling for 27¾ feet before an additional drill pipe section must be added; a remote-controlled power-driven tool handling unit which permits drill pipe sections to be quickly added or removed without manual effort; air-blast cleaning of drill hole; and an operator's cab so located that the operator is immediately adjacent to the drill hole at all times.

Hard-Facing Electrode

Manufacturer: Mir-O-Col Alloy Co., Inc., 312 North Avenue 21, Los Angeles 31, Calif.

Claims: Improved flux coating, more rapid burn-off rate, porosity-free deposits and smoother flowing characteristics are features of the new Mir-O-Col No. 2 hard-facing electrode. Marketed by Mir-O-Col Alloy of Los Angeles, the rod is especially recommended for rebuilding heavy-duty equipment where severe impact and abrasion in combination are paramount factors.

Mir-O-Col No. 2 can be used as a

Continued on page 47

GET SHARP POINTS FAST!

You can change seven *ESCO* tested points in seven minutes

without special tools!

MAINTENANCE TIME GOES DOWN
PROFIT PER YARD GOES UP

You don't change self sharpening ESCO points often but when you do you get sharp points *fast*. Just drive out the pin with a hammer and punch. There's always plenty of room to work on ESCO Points. Slide on the new point... put in the pin and drive it home. That's it! You're ready to go. Start using faster digging, money saving, ESCO Points today. Your ESCO Dealer will be happy to give you details.

ESCO ELECTRIC STEEL FOUNDRY COMPANY

Manufacturing Plants
2143 N.W. 25th Avenue, Portland 10, Oregon
712 Porter Street, Danville, Illinois

***ESCO* International—New York Office**
at 420 Lexington Avenue, New York City, N. Y., or Portland Manufacturing Plant

Other Offices and Warehouses
Los Angeles, San Francisco, California
Seattle, Spokane, Washington; Eugene, Oregon
Centralia, Pennsylvania; Houston, Texas
Salt Lake City, Utah; Honolulu, Hawaii
In Canada, Vancouver, B. C., and Toronto, Ontario

why gamble on point performance?

insist on — ESCO —

TESTED POINTS

for...

- DRAGLINES
- DIPPERS
- HOE DIPPERS
- CLAMSHELLS
- FRONT END LOADERS
- DOZER ROOTER
- RIPPERS

look for this mark
of uniform high quality
on every ESCO point...

Every ESCO Point is individually tested for faster digging and longer life.

Now you can increase yardage and get lower cost per yard on all your jobs with *ESCO Tested* Points. Self-sharpening *ESCO* Points are cast of special *ESCO* 12M*, heat-treated for shock absorbing toughness and then *individually Brinell tested* to be sure they have exactly the right degree of abrasion-resisting hardness for faster digging and longer life. Stop taking chances on point performance, start using *ESCO Tested* Points today.

ESCO

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Los Angeles,
San Francisco, Calif.
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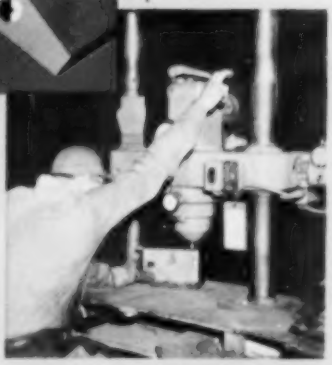
Centralia, Pa.
Houston, Texas
Eugene, Ore.
Salt Lake City, Utah
Honolulu, Hawaii

In Canada, Vancouver, British Columbia and Toronto, Ontario



Operator using Brinell hardness testing machine to be sure each *ESCO* point has exactly the correct degree of hardness needed for faster digging and longer life. This close control is your guarantee of consistently superior performance on your job.

*Write for details on ESCO 12M.

New Equipment . . .

Continued from page 44

general hard-facing rod and is best applied to large sections by the electric arc process.

Deposits will bond equally well with either the parent metal or other hard-facing deposits. Mir-O-Col No. 2 has a high red-hardness and is forgeable at red heat but not machineable. Rockwell C scale is 54 to 57.

Mir-O-Col No. 2 is available in a full range of sizes. Free samples of the electrode, along with descriptive literature is available on request.

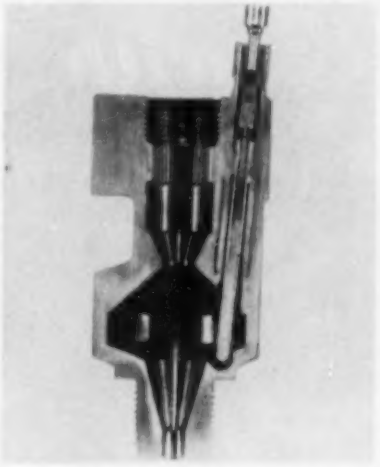
G-E Diesel Heater

Manufacturer: General Electric, Schenectady 5, N. Y.

Claims: A new tubular heater for diesel engines—designed for quick-starting in sub-zero weather—has been developed by the General Electric Company's Industrial Heating Department.

Product of several years of research at the department's Pittsfield, Mass., plant, the tubular heater enables an operator to start a diesel engine under all weather conditions, according to G-E engineers.

The new product was developed by G-E for the Caterpillar Tractor Co. of Peoria, Ill., whose engineers subjected it to extensive hot and cold tests over a period of several years.



A component part of the diesel engine, the tubular heater is about the size of an ordinary lead pencil and is installed into the engine's precombustion chamber. When the engine is cranked, power from the batteries is transmitted to the heater which, in 30 seconds, reaches a temperature of 1,800 degrees F.

This extreme heat materially increases the temperature in the precombustion chamber, thus assisting in igniting the fuel as it is injected into the chamber.

A novice operator easily started a D-4 tractor, equipped with the G-E device, which had been parked outdoors for an entire winter.

In still another realistic performance test, the same tractor was started within an average cranking time of 1.15 seconds following a week-end period in which it had been subjected to sub-zero temperatures with the engine housing cover removed.

Records maintained by Caterpillar engineers during their test period show that pre-heat time of the tubular heater varied from zero to four minutes depending on the temperature factor.

The records show there was not a single case of engine starting failure following pre-heating by the G-E device, and batteries maintained full charge in spite of temperature or the duration of heating time.

23-yd. Tournapull

Manufacturer: LeTourneau-Westinghouse Company, Peoria, Ill.

Claims: The first new machine completely designed and built by the new company, LeTourneau-Westinghouse Co., is the B Tournapull, a 23-yd. single-engine, self-propelled scraper.

Struck capacity of its Model B Scraper is 18 yards; its heaped capacity 23 yards without sideboards. The overall length of the B Tournapull is 40-ft. 6-in. It is 11-ft. 8-in. wide and 12-ft. 7-in. in height.

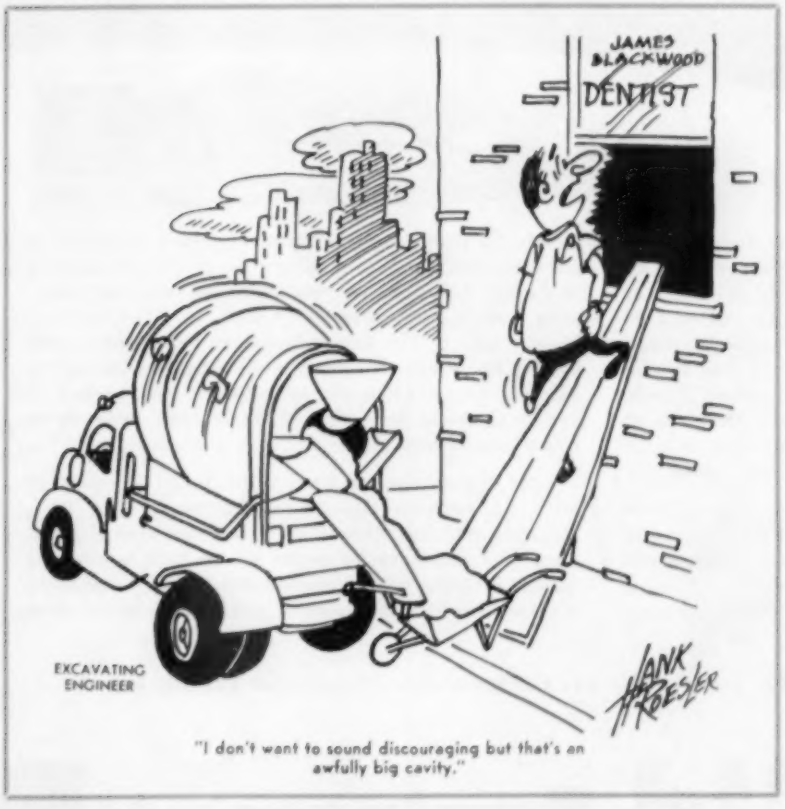
It is powered by a 293 hp Diesel (with choice of Cummins or General Motors engine). It offers 10 gear ratios, ranging from 2.4 to 28.4 mph. Its low gear matches pusher speed and gives full lugging power for pulling through soft going.

Other features embodied in the new B include the easy loading characteristics of its new scraper design, deflector plate, high apron lift, wheels inside the cutting edge of the scraper blade, power steer steering wheel and full-shift fuel supply.

All major assemblies such as transmission, clutch, final drive and differential can be lifted from the machine without the necessity of time-consuming handling of other components, according to LeTourneau-Westinghouse.

The pushblock is newly-designed to connect with the scraper bottom as well as the side sheets. This gives direct action and makes use of the full power

Continued on page 52



"I don't want to sound discouraging but that's an awfully big cavity."

Moorman builds Buford Dam with "Eucs"

J. W. Moorman and Son, well known Texas contractor, is using 31 Euclids to move about 4 million cu. yds. of earth and rock at Buford Dam 35 miles northeast of Atlanta, Georgia. This rolled earth fill dam, being built under supervision of the U. S. Army Corps of Engineers, will rise about 200 ft. above the river bed and will be 1,630 ft. long. It's a multi-purpose project that will provide improved navigation in the Apalachicola River during lowflow periods, as well as flood control, water storage for Atlanta and production of hydro-electric power.

Work on the main dam was started in June of 1954 and by January of this year was about 80% completed. In addition to the big yardage of earth fill, over a half million yards of rock must be moved so Moorman is using "Euc" Rear-Dumps and Bottom-Dumps as well as Scrapers. Two Euclid water wagons play an important part, too, in providing the moisture necessary for proper compaction of the fill. A fleet of 16 "Euc" Scrapers with top extensions move loads averaging 16 bank yards on hauls of about 4,000 ft. The Bottom-Dumps and Rear-Dumps are loaded by shovels and draglines in an upstream borrow pit and from stockpiles placed by "Eucs" that worked on earlier contracts for saddle dikes, tailrace and powerhouse excavation.

Yes, Buford Dam is another 100% Euclid earth moving job . . . evidence that leading contractors like J. W. Moorman and Son depend on "Eucs" for their toughest jobs. Your nearby Euclid dealer will be glad to give you facts and figures on the complete line of Euclid equipment and help with your earth moving problems . . see him soon.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

NOT in the Contract

A man who had gotten up early to take care of an errand on his way to work was walking through the city streets with a grandfather clock under his arm. Turning a corner, he walked head-on into an inebriated gentleman, and they both went sprawling to the sidewalk.

"Why don't you look where you're going?" said the sober one.

"Oh yeah," said the drunk. "Why don't you carry a wrist watch like everybody else!"

A siren wailed and the traffic officer motioned the blonde lady driver to the curb.

"Lady," he snarled, "you have no red light on your car."

"Officer," she snapped, "I'll have you know this is not that kind of car."

Wife (to contractor-husband reading): "I want to do some shopping today if the weather permits. What does the paper forecast say?"

Contractor: "Rain, hail, sleet, snow, thunder, lightning, and fierce winds."

The bachelor, left in charge of his baby nephew, faced a dilemma. Frantically he called a friend, a young father with his first hopeful, and was thus coached:

"First place the diaper in the position of a baseball diamond, with you at bat. Fold second base over home plate. Place nephew on pitcher's mound. Then pin first base and third base at home plate."

Boss (to stenographer): "Congratulations, Miss Simpkins—this is the earliest you've been late!"

Contractor (to newly employed laborer): "You've been with us a week now and so far we haven't been able to find anything you can do; yet when we hired you, you said you were a handy man."

Laborer: "That's right, sir. I am a handy man. I live right around the corner."

Contractor: "Where in heaven's name does all that grocery money go that I give you?"

Wife: "Stand sidewise and look in the mirror."

Football coach: "Who ever told you that you were a football player?"

Candidate: "When I was born my father looked at me and said, 'This is the end.'"

A very particular housekeeper was having her bedroom painted. Wishing to learn what progress the painter was making, she crept to the bottom of the stairs and listened. Not a sound reached her ears.

She: "Painter, are you working?"

Painter: "Yes, Ma'am."

She: "I can't hear you making a sound."

Painter: "Perhaps not, Ma'am, I ain't putting the paint on with a hammer."

A young man discreetly inquired of his blind date, "Do you shrink from kissing?"

"I'd be nothing but skin and bones if I did," was the answer.

A contractor received a telegram stating that his mother-in-law's body had been found floating at the seashore, a lobster attached to each toe. He was asked to telegraph instructions for disposition of the body.

He wired back: "Sell the lobsters and set her again."

"What do you mean by coming home half drunk?" asked the irritated wife.

"It's not my fault—I ran out of money," her husband explained.

Chorine (hearing knock on her dressing room door): "What is it?"

Stage hand: "Telegram, lady."

Chorine: "Shove it under the door."

Stage hand "Can't; it's on a tray."

Then there was the landlord who, asked why he didn't light up his dark hallway, replied: "We had a light there for three years. No one fell, so we took it away."

Wife to operator: "I wish you had the spunk the government's got. They don't let being in debt keep them from spending.

"I wish Mike would hurry up with that culvert."

To meet the stepped-up needs of industry . . .

ALLIS-CHALMERS PRESENTS TWO

ALLIS-CHALMERS TS-360

280 HP

15-YD CAPACITY, STRUCK

20-YD CAPACITY, HEAPED

NEW BIG-YARDAGE WORK CAPACITY!

Power that pays

The TS-360's great new Allis-Chalmers engine spearheads a whole new power train that offers more rim pull at lower speeds for better loading, hauling and spreading performance; faster acceleration, easy shifting and quick getaways. Combined with new 20-yd capacity, this all adds up to fast, high-volume, high-profit work cycles.

New operating ease and safety

In addition to big-job power and gearing, the TS-360 Motor Scraper offers everything an operator needs to work easily, yet efficiently . . . new Double-Safety air brakes, new selective steering, direct electric starting, new multiple-disc cable control . . . and many others you'll want to know more about.

Strength to back it up!

The new TS-360 is built around a new, all-welded, heavy steel main frame that makes possible the service accessibility of unit construction. What's more, there's an all-new final-drive gear train, with new gears, shafts and bearings. These and many other advantages mean more work done, lower maintenance cost and longer equipment life.

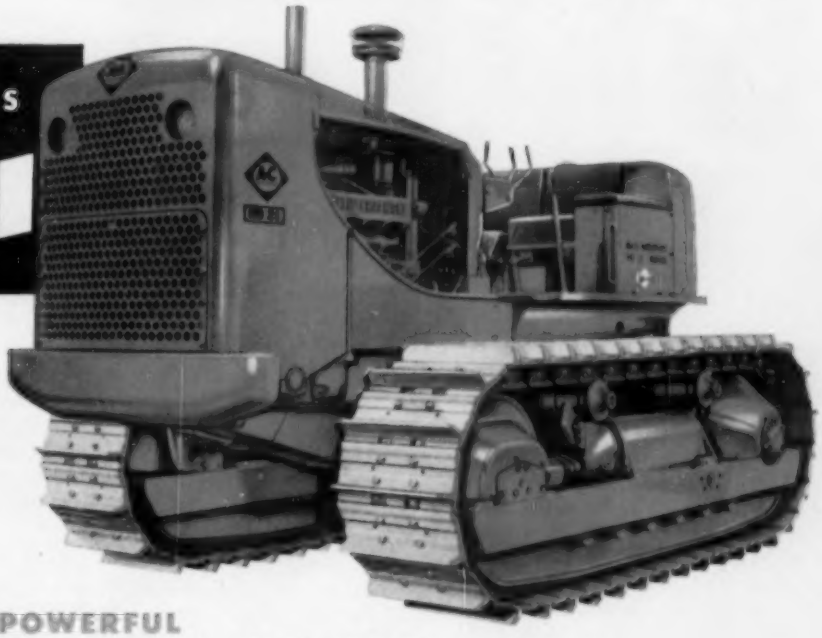
Nowhere can you match these two in the amount of work they do!

. . . for more power—better performance—longer life . . .

NEW, POWERFUL DIRT MOVERS

ALLIS-CHALMERS

HD-21



204 NET ENGINE HP

44,000 LB

BIGGEST, MOST POWERFUL CRAWLER IN PRODUCTION . . . ANYWHERE!

New standards of output

The HD-21 introduces the new Allis-Chalmers engine and a great new power transmission team. Together, they provide extra speed with any load, extra pulling power at any speed . . . wider speed ranges and more range overlap. And with its advanced design torque converter (*the result of 15 years of leadership by Allis-Chalmers*) the HD-21 puts its power to work with less shifting than ever before possible . . . to help you reach a new high in efficient, profitable production!

New standards of durability

From the new Allis-Chalmers diesel with "follow-through" combustion to new, heavier Tru-Dimension track, the HD-21 is built to take today's big loads in stride, and come back for more. Here are just a few more of the long-life features you can't get from anyone but Allis-Chalmers . . . at any price: all-steel Box-A main frame, straddle-mounted final-drive gears, 1,000-hour truck wheel lubrication, oil-enclosed track release mechanism.

New low cost per unit of work

The HD-21 offers 20 percent greater over-all performance . . . provides a new measure of tractor value. Add the *planned* approach to service offered by Allis-Chalmers dealers, and it's the ideal team for men tackling today's big jobs.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

New Equipment . . .

Continued from page 47

of the push tractor. Because the push-block is low, it directs the push tractor's thrust straight to the blade. The block is rigidly reinforced for maximum strength.

The quick release on the scraper allows gravity drop of the bowl, with the machine's electric controls always available for hoisting. This feature, it is pointed out, allows the operator to "pump" loads, recognized as a big help in working effectively in sand and other loose materials.

The scraper's curved apron lifts 6 feet 6 inches to permit free ejection of any material.

Weight distribution puts 56% of loaded scraper weight on the drive wheels, which helps get heaped loads in a hurry.

Operation of the rig is simple, for controls are few in number. A lever to the right of the steering wheel raises and lowers the bowl. Fingertip controls operate apron and tailgate action. Other levers are shift lever, transfer case lever and hand throttle. Floor pedals operate the accelerator, clutch and brake. Starting is by dashboard pushbutton.

Despite its size, the B can turn around non-stop in a space 35 feet wide.

Big 4-wheel air brakes (7536 sq. in. of total brake surface) and power steer provide an ample margin of safety on steep grades. Additionally, the new B has a positive parking brake on the output shaft of the transfer case.

Large tires (27 x 33, 30-ply) are used around, and provide ample load-carrying capacity without overloading. Tires and wheels are interchangeable

between prime mover and scraper, which means that one spare can serve an entire fleet.

Interchangeable with the scraper for use with the B Tournapull is a 35-ton rear dump. It is rated at 23 yards struck and 27 yards on a 2-to-1 heap without sideboards.

Dimensions of this big, wide bowl are 17 feet 8 inches long, 19 feet 2 inches wide with a maximum depth of 7 feet 6 inches.

Tractor Shovel

Manufacturer: Allis-Chalmers Manufacturing Co., Tractor Division, Milwaukee 1, Wis.

Claims: A new, more powerful 2-yd. model HD-9G tractor shovel, with design modifications and construction improvements, offering greater productivity, longer life, maintenance, simplicity, ease of operation and maximum visibility is announced.

The new HD-9G produces 100 net engine horsepower and 82 drawbar horsepower . . . simultaneously handles maximum traction and hydraulic pump power requirements with complete ease. With a low gear speed of 1.4 mph, the HD-9G develops 23,000 lbs. pull at the drawbar or push at the shovel . . . quickly and easily handles the toughest digging or ripping operations. The improved HD-9G also incorporates a new ceramic master clutch lining originally developed for aircraft wheel brakes. This new type clutch lining operates longer between adjustments . . . reduces lever pull for easier operation . . . offers increased clutch life even on the toughest jobs.

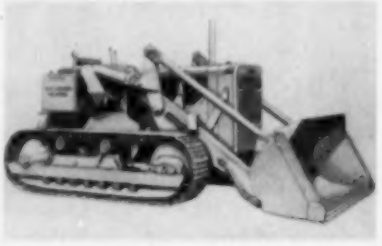
A completely new bucket design for the 2-yd. HD-9G makes digging, loading, and dumping easier, faster and cleaner—reduces spillage. A deeper box section and replaceable wear plates of tough, abrasive steel give added strength —longer bucket life.

The new hydraulic system in the HD-9G practically eliminates external hoses, fittings and hardware. A new style hydraulic tank with enclosed manifold, piping, relief valves and diverter valve to operate rear-mounted equipment, eliminates outside leaks for safer operation. Short, external piping is directed under the seat to the left side lift and dump cylinders. The cowl and deck of the HD-9G are free of any hoses.

Also sealed in the hydraulic tank, a magnetic filter, suction line screen, and replaceable full-flow oil and air filters are easily accessible for fast, efficient maintenance.

The new improved hydraulic pump for the HD-9G tractor shovel, driven from the front end of the engine crankshaft, operates in a medium pressure range for long life.

The new type shovel side frames are mounted on the tractor rigid beam with wedge blocks to maintain rigidity. The upper part of these frames is solidly connected across the tractor with a low completely new, heavy-duty steel built-in stabilizer which becomes the cowl of the tractor.



The new booms on the HD-9G are 50% stronger.

A new addition to the wide variety of attachments available for the HD-9G tractor shovel is the tip-back bucket which allows the operator to roll the bucket back approximately 25° at ground level. Ideal for handling greater capacities of loose stockpiled materials, the tip-back bucket can be carried lower to the ground for greater stability.

⅜-yd. Excavator

Manufacturer: Unit Crane & Shovel Corp., 6411 West Burnham St., Milwaukee 14, Wisconsin.

Claims: The manufacturer announces the addition of a new ⅜-yd. Model 510, called the Challenger, to its line of equipment.

Completely new in design and construction, this model embodies these features: hydraulic clutch control, full floating trunnion mounted tapered drums, self-aligning hook shoes that

Continued on page 54

P&H Model 655-B; 1½-yd. capacity. P&H builds the world's most complete line of Power Cranes and Shovels.

P&H ...20 YEARS AHEAD with welded construction!

Think of it! . . . 20 years ago P&H threw out the old patterns to give you a new and better kind of power shovel — *completely welded of rolled alloy steels!*

Twenty successful years in the field have proved beyond all doubt the advantages you gain through greater strength and the elimination of dead weight. Today's P&H machines give you faster cycles, still more dependable service — still lower yardage costs. Behind today's machines is P&H's long experience in welded design and construction — still 20 years ahead of the field.

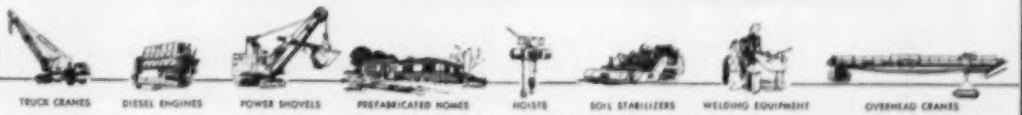
All-welded construction is only one of many major improvements originated by P&H. There are others that will earn you more money than is possible with older style machines you may now be using. Get the facts from your nearest P&H dealer. P&H Power Crane and Shovel Division, Harnischfeger Corporation, Milwaukee 46, Wis.

HARNISCHFEGER

See your P&H dealer

"Your P&H Dealer has the experience, the organization and the facilities to serve you reliably in every way. He's ready to deliver the kind of on-the-ground service that keeps your jobs moving on schedule. Your P&H Dealer is tops in the business. Get to know him."

the P&H *Line*

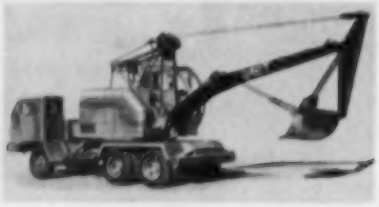


New Equipment . . .

Continued from page 52

distribute applied pressure over a maximum bearing area, force feed lubrication, interchangeability of parts, full range vision safety cab with large side entrance. Power is by a Ford heavy-duty industrial engine with torque converter.

Established features such as the one-piece cast gear case, line engine mounting, involute splines and drop forged parts are also incorporated in the new Unit Challenger.



Lifting Crane Features

Manufacturer: Marion Power Shovel Co., Marion, O.

Claims: The new Marion 83-M—an all-purpose excavating machine with special features designed to make it a 60-ton special lifting crane—is being announced by the manufacturer.

As a 2-yd. shovel, the 83-M was designed for use in construction, quarrying, and mining. But the machine can be easily converted in the field to a dragline, clamshell, pull shovel, or crane.

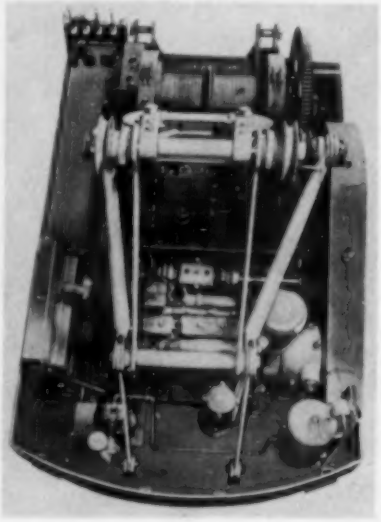
The 83-M features both heavy-duty construction and special design features for crane service. A third drum is available on the 83-M crane for handling piles, snaking-in or snubbing loads, or it can be used as a high speed boom hoist. The machine has a high retractable and self-raising gantry which is raised or lowered under power in a matter of minutes. An independent boom hoist, optionally available, provides "power up and power down" in the raising and lowering of loads and it uses machinery power instead of a brake to control lowering of the boom.

For extra stability in crane service, the crawler width can be spread to 13 feet, 5 inches and extra-long 19-foot crawlers are available. The crane boom is the gooseneck type, allowing somewhat heavier and bulkier loads to be handled closer in to the machine and large loads to be lifted higher than with the use of an open throat boom.

All models of the 83-M feature a torque converter as standard equipment. One of the outstanding new features of the 83-M is new self-cooling swing clutches. They are designed to virtually eliminate heat damage.

Swing, propel and crowd retract clutches never require adjustment and hoist and crowd-out clutches have only one adjustment.

The Marion 83-M has ball or roller bearings at all principal friction points



and major gear housings on the machine are enclosed in an oil bath.

Marion air control frees the 83-M from all levers, bell cranks, toggles, pins, and so forth. Only 12 pounds hand pressure by the operator on compensating-type air control valves releases full machine power.

Experience Tells
Omaha Dragline Buckets are the product of more than 44 years bucket building experience. They have been tested and proved on the job. Ask the contractors who use them. They'll tell you, "You just can't beat an Omaha." Available in four types to fit your needs. Write today for catalog giving complete information and specifications.
OMAHA
DRAGLINE BUCKETS
DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.

Dry-Type Air Filter

Manufacturer: Purolator Products, Inc., Rahway, New Jersey.

Claims: A new line of dry-type "Micronic" air filters, designed to prolong life of Diesel and gasoline engines and to improve their operating economy is available.

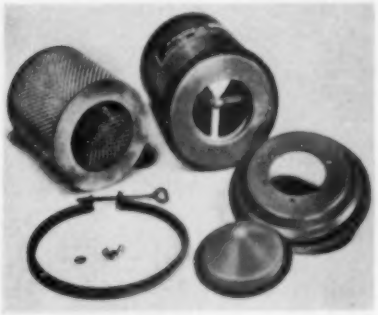
Purolator engineers developed the new dry-type filter especially to meet the rigorous requirements of truck, bus, and tractor operation, fleet service, marine power, and stationary services.

The Micronic element of the new filter is of resin-impregnated, convoluted cellulose. The manufacturer claims that the dry-type element provides efficiencies over 99% with airborne particles of all sizes, regardless of engine speed. Due to inherent vibratory character-

istics of an engine, the dry-type filter is largely self-cleaning.

Because the Micronic filter offers little resistance to air flow, it reduces pressure drop to a minimum, keeps engine power at maximum, reduces fuel consumption.

Basic types in the Purolator dry-type Micronic air filter line are (1) the manifold mounted type for up-draft, AF-100 (shown knocked down in picture); (2) hat type for down-draft, AF-200; and (3) outside cowl mounted type, AF-400. The AF-100 is intended for triple or dual mounting on Diesel engines or single mounting on gasoline engines. The AF-200 is usually single mounted on gasoline engines up to 150



hp; the AF-400 usually single mounted on gas or Diesel up to 200 hp.

In actual field and laboratory tests the new filter has shown itself capable of removing airborne particles as small as one micron, or 0.00004 inch in diameter. When the filter cake builds up in service, particles of submicronic sizes are removed.

High Strength Wire Rope

Manufacturer: American Chain & Cable Co. Inc., 929 Connecticut Ave., Bridgeport 2, Conn.

Claims: A new high strength wire rope claimed to be at least 15% stronger than those now being manufactured has been announced by the wire rope divisions of American Chain & Cable Co. Initial production will go to the construction, petroleum, mining, and logging fields.

An average tensile strength of 300,000 psi has been achieved by the use of special precise analysis high carbon steel wire and improved processing.

The preformed rope, to be known as VHS, designating very high strength, will be marketed by both the Hazard Wire Rope and American Cable Divisions. It has been widely tested in heavy-duty construction, mining, petroleum, and logging installations where

Continued on page 56

In purchasing this 100 ton transformer The Consumer Power Company of Flint, Michigan, showed faith in the Westinghouse slogan "You Can Be SURE If Its Westinghouse."

In placing a large percentage of this load on one of their Rogers Trailers, P. Van Harren & Sons of Bay City, Michigan, again displayed their faith in the rugged dependability and braking reliability of these trailers.

This transformer, the heaviest load ever moved over Flint Streets, measured 20′ x 15′ x 10′. The move was made under the supervision of Venus and Russell Van Harren with Jacob Smith as rigger foreman.

You, too, can place the utmost confidence in Rogers Trailers, regardless of the type needed or the difficult nature of the loads it will be required to haul.

136 Orchard Street

YOU GET MORE FOR YOUR MONEY IN A ROGERS TRAILER

EXPERIENCE builds 'em

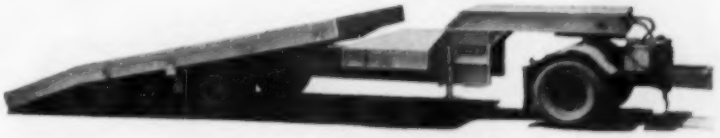
ROGERS

PERFORMANCE sells 'em

ROGERS BROS. CORP.

ALBION, PENNA. CABLE: BROSITES

Export Office: 50 Church St., New York 7, N. Y., U. S. A. Cable Address: BROSITES



Divided bed, tilt deck trailer with gooseneck

New Equipment . . .

Continued from page 55

its service life more than doubled that of existing cables. Present diameters of the new product range from ½ inch to 2 inches.

VHS cable, it is stated, is wear- resistant and will keep its shape under pressure. A special new lubricant is used which is designed to last for the life of the rope.

Field tests of VHS drag lines and shovel hoist ropes have been particularly impressive, according to the manufacturer, with a definite decrease in breakage due to shock and misuse. In handling crushed stone, eight 1¼ -in. drag cables had an average service life of 170 hours as compared with an average of 80 hours for the rope previously used. Three of the VHS ropes lasted well over 200 hours. In a similar installation for trap rock, the new cable handled 262,000 yards versus 130,000 to 150,000 yards for the previous rope.

VHS shovel hoist ropes—1½ inches in diameter—are being used in several open pit copper mining operations. In one case, seven of the new ACCO lines averaged 564,000 tons of material as against 521,000 tons for a second brand of rope, and 490,000 tons for a third brand. In another installation, 14 VHS ropes handled an average overall load of 605,883 tons compared to 531,000 tons for the closest competitive brand.

In a third open pit installation, where both rock and ore were being dug, an even stronger advantage was recorded for the new hoist ropes—822,286 tons dug in approximately five months against 329,437 tons for a second brand of rope and 318,609 tons for a third brand.

Eimco Attachments

Manufacturer: The Eimco Corp., Salt Lake City, Utah.

Claims: The firm's 105 tractor is now available for bulldozer, winch or other attachments. The Eimco 105 tractor was announced about a year ago with a loading attachment. Both loading and bulldozing attachments are Eimco products, but the basic tractor is built to standard SAE mounting dimensions so that any attachment made with standard SAE drilling will fit the prime mover.

The tractor boasts these features: Unidrive transmission which provides for gear shifting under full power in motion, and instant reversals, while eliminating the need for steering with the clutches; and clutches that never need adjustment, with complete elimination of the master clutch. Independent track control through dual final drives is provided so that one track may run forward while the other runs in reverse

for true spin turns. Fingertip control, using only two small levers controls all the motions of the tractor.

The 105 is now equipped with a 120 hp Diesel engine with matched torque converter for smooth, balanced power to load requirements.

Eimco tractors equipped with bulldozers weigh approximately 18 tons and are available with track widths of 24-in. to provide low ground pressures in soft unstable areas.

Both straight and angle dozing blades are available for hydraulic operation.

Tractor with bulldozer develops 32,300 lbs. drawbar pull, with a maximum of 45,000 lbs. for zero track slippage.

I-R Starting Motor

Manufacturer: Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

Claims: The manufacturer announces a third size starting motor in its line. This new starting motor is known as the Size 5BM and is designed for starting service on gasoline engines with from 750 to 1,750 cubic inch displacement and for diesel engines from 300 to 700 cubic inch displacement.

This new starting motor incorporates the time proven Ingersoll-Rand Multi-Vane air motor as the power source, and is directly connected by means of a splined shaft to the Bendix drive unit. This design eliminates gears and assures minimum maintenance. The bearings in the air motor are sealed to keep grease in and dirt out.

Smaller and more compact than

Continued on page 58

"Im warning you. If you go any deeper I won't be responsible."

Manitowoc...

MASTER over miles of hardpan

2 Manitowoc One-Yard Hoes lick tough hardpan on refinery job for BECHTEL CORP. at Anacortes, Washington

When the going got rough and other units scratched, picked and hacked to the tune of lost time and low production — it was time to bring in the Manitowocs!

The two "1600" hoes waded in and the hardpan took a pasting. Mile after mile, these "work horses" dug in — 25 ft. deep at times — and came up with full dippers of pay dirt every time.

The trench had to be 9 ft. wide in many spots and Manitowoc's boom strength and stability enabled it to trim trench edges clean and neat without traveling. This superior feature — plus Manitowoc's 37′ reach resulted in no lost motion and more miles of trench per shift.

Need a big-producing hoe? Get the facts on the Manitowoc 1600. Manitowoc Engineering Corp., Manitowoc, Wis.

MANITOWOC

SHOVELS 1-5 YD. Speedcrane CRANES 20-100 TON

New Equipment . . .

Continued from page 56

equivalent electric starters, the air starting motor gives reliable starting service at all times. It eliminates the necessity of generators, banks of storage batteries, and the costs of battery maintenance and replacement. It is not affected by climatic conditions, which often injure

the insulation of electric starting motors because of deterioration of windings.

The new 5BM Air Starting Motor joins the Ingersoll-Rand line including the larger Size 9BM and the largest Size 20BM.

New D7 Crawler

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Claims: Increased horsepower and engine speed highlight many new engineering improvements which have been introduced in the new D7 track-type tractor.

The engine in this new tractor has 128 horsepower at 1,200 rpm compared to the 108 hp at 1,000 rpm in the previous model. The maximum drawbar pull for the D7 is now 28,700 lbs., approximately 3,500 lbs. pull more than its predecessor.

Another important innovation designed to improve the new tractor's operation is an engine balancer which reduces vibration and permits the four-cylinder engine to operate at 1,200 rpm with the same degree of smoothness as a six-cylinder design.

Other new major engineering features which contribute to greater productive capacity in the new D7 include: redesigned engine block; new fuel injection system; a new starting engine; new radiator; larger fuel tank; new fuel filter system; redesigned oil filter base adapter; and improved air cleaner.

The cylinder block on the D7 was redesigned to include many improvements which give the engine greater power and smoother operation. It now presents a much smoother surface since all of the oil lines are located within the block. This simplifies removal of the head. The oil passages in the block from the oil pump to the oil filter and the manifolds have been made larger to reduce the restriction to oil flow. The new block also has enlarged water passages to handle the greater water flows.

Quicker starts are obtainable with the more powerful starting engine now standard on this tractor. This starting engine has a single lever control for greater ease of operation.

A radiator which provides full width water cores is being introduced on the D7. The additional water core allows a reduction in fan horsepower. A 29-in. diameter fan requires considerably less horsepower.

Capacity of the D7's fuel tank is now 85 gallons, a 15 gallon increase over the predecessor model.

New low-cost, efficient, impregnated paper filter elements are used in the redesigned fuel filter compartment. This element is smaller than the cotton wound elements formerly used on the D7. However, with minor modification, this housing can still be adapted

to the cotton-wound units when necessity demands.

Redesigning of the oil filter base adapter eliminates the need for any external oil lines.

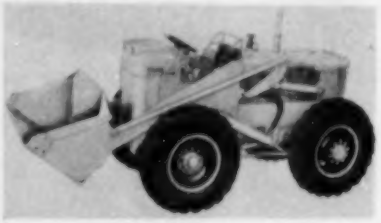
The new water pump, mounted on the front face of the timing gear housing on the left hand side, has greater capacity and efficiency.

The new 10-in. diameter tray type air cleaner will provide the D7 with an improved efficient cleaner of sufficient capacity to handle the larger volume of air used by the engine. Larger air pipes from the cleaner to the manifold are also provided.

Tip-Back Loader Bucket

Manufacturer: Tractomotive Corp., Deerfield, Ill.

Claims: A bucket with as much as 25° of tip-back at ground level is announced by Tractomotive Corp. for its TL-12 Tracto-Loader. This improvement in the design of the four wheel drive one cubic yard loader affords many advantages including easier and faster loading as well as larger loads. After getting into the pile, the operator can scoop or jockey a load into the bucket by operating the tip-back control lever.



This is especially useful in small piles of material where the tendency is to push instead of load.

During the bucket raising cycle, the amount of tip-back is automatically increased, improving the bucket's ability to retain heaped loads. This results in another important advantage—a practical carrying height of three feet, at which the amount of tip-back is 41°. The lower carrying position affords better operator vision as well as greater balance and stability.

Light-Weight Barnes Pump

Manufacturer: Barnes Manufacturing Co., Mansfield, O.

Claims: The firm is now marketing a full range of light weight self-priming centrifugal pumps, especially designed for maximum portability.

The full Barnes light weight line includes pumps ranging in size from one inch suction and discharge openings, to a big three inch model.

Offered in four models, SP Jr.; Flash; Star; and Lightning, Barnes light weight pumps are made with special cast aluminum bodies to reduce weight to a minimum and make them highly mobile for such diverse uses as underground maintenance, small boat bailing, small plot irrigation, and general utility use. They are especially adaptable to situations where pumps must be moved frequently, or where they are used in hard-to-get-at locations.

The "SP Jr." Model has 1-in. suction and discharge ports, a capacity of 1,500 gph, is powered by a 1 hp Briggs & Stratton gasoline engine, and weighs only 45 lbs.

The "Flash" has 1½-in. suction and discharge, a capacity of 5,000 gph, is powered by a 1.6 hp Briggs & Stratton

Continued on page 65

Picks up as much as 30 cubic yards at a bite

TIMKEN® bearings reduce cable wear

IMAGINE the strain on the cables as this big Bucyrus-Erie walking dragline picks up 30 cubic yards of dirt, then swings and dumps it! To prevent excessive cable wear and keep down-time to a minimum, the boom point sheaves are mounted on Timken® tapered roller bearings.

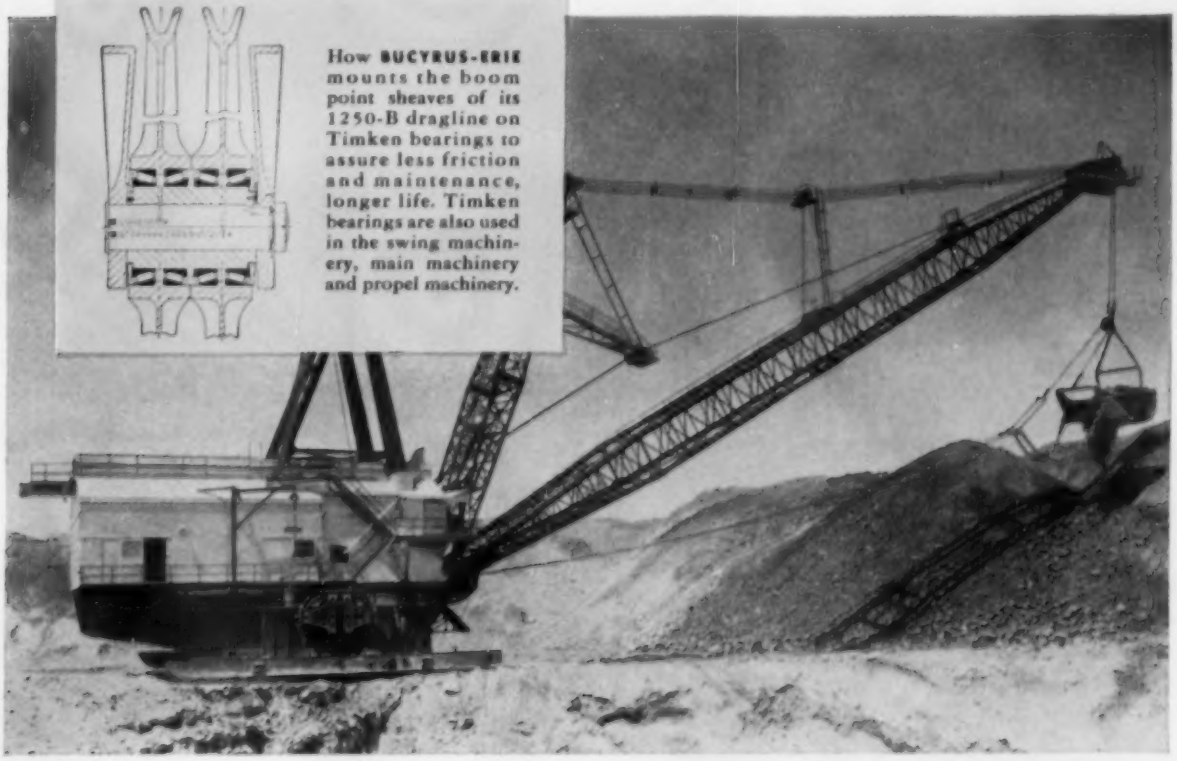
Timken bearings reduce cable wear because they practically eliminate friction and cable slippage. They can because they're designed to roll true; and because they're made with microscopic accuracy to conform to their design. And you're doubly assured of Timken bearings' quality because we make our own steel. No other U. S. bearing maker does.

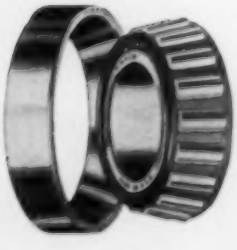
Each of the two sheaves in the swivel yoke is mounted on a pair of Timken bearings. Because of their tapered construction, Timken bearings take radial and thrust loads or any combination. They take radial loads when the bucket is dragged in and hoisted; they take thrust loads when the heavy loaded bucket swings in mid-air. And they easily take the sudden jerks caused by cable slack and boulders during the drag operation—because rollers and races of Timken bearings are case-hardened to give them hard, wear-resistant surfaces over tough, shock-resistant cores.

Always specify Timken bearings in the equipment you build or buy. Look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

How **BUCYRUS-ERIE** mounts the boom point sheaves of its 1250-B dragline on Timken bearings to assure less friction and maintenance, longer life. Timken bearings are also used in the swing machinery, main machinery and propel machinery.





TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

WE MAKE OUR OWN STEEL

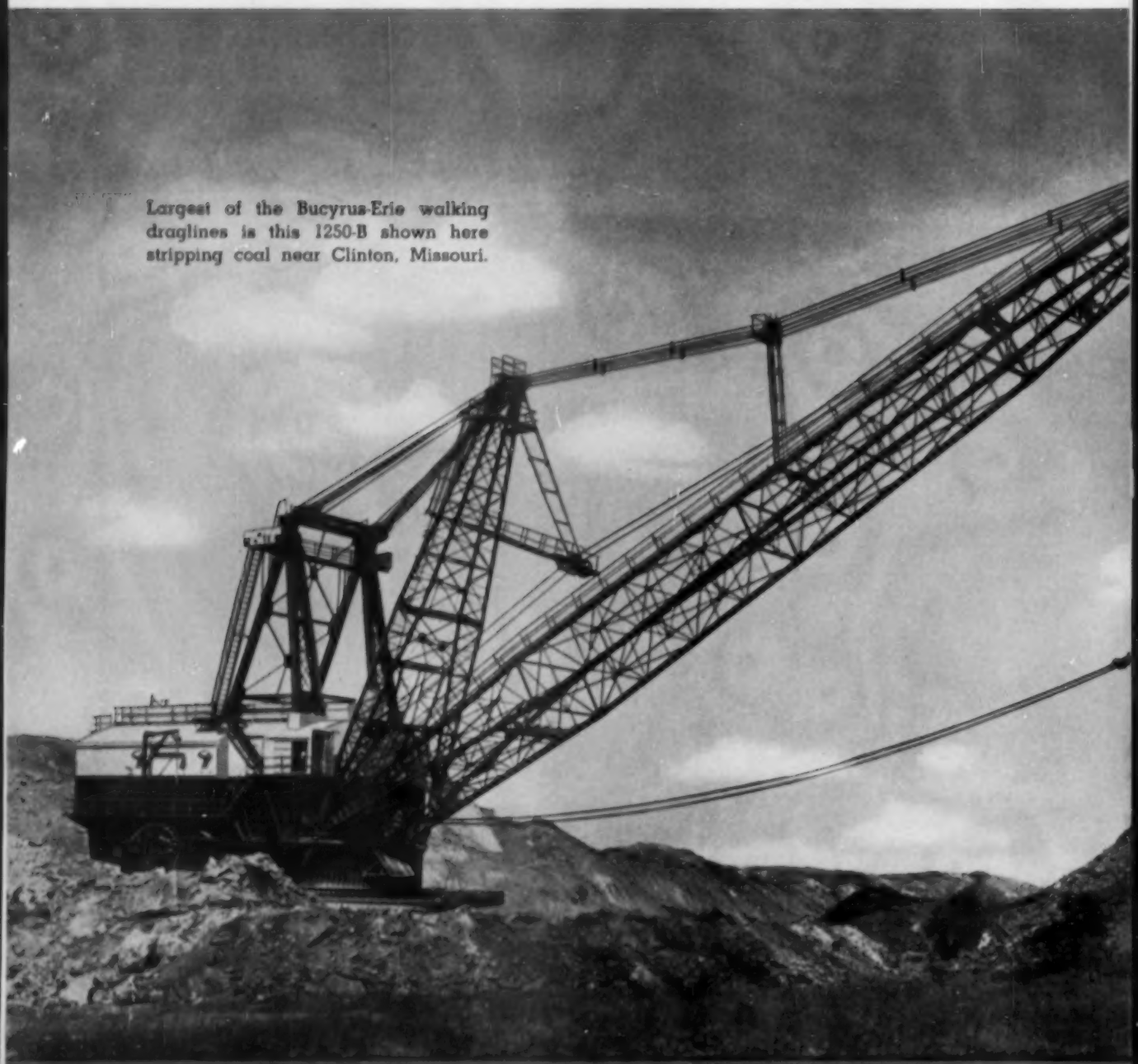
The special grade alloy steel which gives Timken bearings their strength and resistance to wear is made in our own steel mills.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION ✳

BUCYRUS ERIE

... Maker of the WALKING



Largest of the Bucyrus-Erie walking draglines is this 1250-B shown here stripping coal near Clinton, Missouri.

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

World's Largest Selection of

DRAGLINES

For efficient large-scale excavation, you will find a Bucyrus-Erie walking dragline to match your job. There are ten models, ranging from the readily dismantled and reassembled 180-W to the big 1250-B — the largest selection of walking draglines in the world.

Whatever size you choose, you are assured of the same dependable performance that has been characteristic of Bucyrus-Erie walking draglines for years. They have a front end design that combines great strength with light weight; the exclusive Bucyrus-Erie walking action with simplicity of design, cushioned action, and smooth fast moveups; and Ward Leonard variable voltage control on all electric powered machines — plus many other features which have made them famous the world over.

Whenever a job involves huge yardages, a Bucyrus-Erie walking dragline — in a size to fit your needs — is a dependable way to economical output. 37L55C

The 180-W, smallest of the Bucyrus-Erie "walkers", is shown here building an earth dam for a settling area in a Florida phosphate mine.

1880 75 Years of Service to Men Who Shape the Earth 1955

Left: Two D7 Cats bring down dense willows. Right: Close-up shows a brush-stacking D8 crawler on 22-mile McGinnes Bros. job.

Rebuilt River . . .

Continued from page 27

simplified enormously by this rapid communications method. Radio waves were the one and only modern equipment which could cut easily through the Rio Grande's bosque. It was another matter for tractors and draglines, successful as they were in getting the job done rapidly. The company's Beechcraft Bonanza aided the supply lines.

The Bureau of Reclamation is doing everything it can to have the project advanced just as far as possible by the end of this fiscal year. Any work remaining after that time will be programmed just as soon as possible, so that the best utilization of the Rio Grande's waters will be a reality in the very near future.

Oldest Irrigation District

Irrigation in this central New Mexico area is some of the oldest in recorded history and it may definitely be the oldest in unrecorded history. Artifacts uncovered by archeologists of the University of New Mexico in the Belen area indicate that the oldest civilization on earth may have flourished in that region nearly 30,000 years ago.

If that is true, it may also be a safe assumption that the waters of the Rio Grande of that day may have been diverted for growing Indian maize. Certainly, the Rio Grande in later times has been used extensively for that purpose. Santa Fe, N. M., is one of the nation's oldest capitals, and irrigation on the Rio Grande was begun by Indians, Spaniards, and Franciscan missionaries who first visited the area in the 1700's. Construction of storage dams like Elephant Butte, and diversionary works like Isleta were done in a comparatively early era of the Bureau of Reclamation's history.

The fertile Rio Grande Valley, extending from the mountains of Colorado to the confluence with the Gulf of Mexico, forms an important section of the great southwestern breadbasket. As an indication of the truth of that statement, serious consideration is being given by Bureau and other engineers to augment the supply of water in the Rio Grande by trans-mountain diversions from other watersheds if necessary.

Communications rated high on the strung-out jobs. Vega's General Super G. H. Elmore penetrates miles of bosque with Motorola transmitter in the firm's Socorro office.

Personnel

The Rio Grande rehabilitation work, which ranks as one of the most interesting projects in the Bureau's history, is a function of Region 5, headquartered

Continued on page 64

Cuts Channels—Builds Dams in 3-YARD-BITES!

A MARION 93-M dragline swinging a 3 cubic yard bucket on an 80-foot boom is cutting a big swath in the Canadian countryside near Quebec.

It is digging channels, building levees and constructing dams in a big construction operation that will clear the way for development of asbestos deposits.

The capacity of the 93-M keeps the big job moving along rapidly. Its long boom provides casting radius that eliminates rehandling.

Investigate the MARION 93-M for the big jobs in your future — it is a rock machine with big production records in heavy construction and quarry work.

MARION • OSGOOD • GENERAL O-G

MARION POWER SHOVEL CO. • MARION, OHIO, U. S. A.

A Subsidiary of Merritt-Chapman & Scott Corporation

POWER SHOVELS FROM ½ TO 60 CUBIC YARDS
PILE DRIVERS • WALKING DRAGLINES

DRAGLINES • CLAMSHELLS • CRANES • BACKHOES
TRUCK CRANES • MOBILCRANES • LOG LOADERS

Your Confidence Is Justified Where This Flag Flies

Rebuilt River . . .

Continued from page 62

at Amarillo, Texas. The job was designed and is being administered under the general supervision of L. N. McClellan, Assistant Commissioner and Chief Engineer of the Bureau of Reclamation at Denver. Robert W. Jennings, Regional Director at Amarillo, is in charge of the field work, assisted by A. A. Lewis, Regional Engineer; John C. Thompson, Project Manager; Charles H. Clark, Office Engineer; and Walter W. Hall, Field Engineer.

Field work on the currently active Vega Engineering & Grading Co. contract is under the personal supervision of Lawrence Arpin, owner of the company, assisted by G. H. Elmore, General Superintendent.

BREAKER BALLS
of Ni-Hard and Semi-Steel

EAGLE Breaker Balls available of abrasion resistant Ni-Hard nickel - chromium - iron alloy for toughest jobs and of tough semi-steel for regular jobs. Pear shaped, with easily replaced hook, in 5 sizes: 1500 lbs. to 6000 lbs. Spherical in 6 sizes: 1275 to 6750 lbs.

BULLETIN 952 describes Breaker Balls, Pile Hammers, Line Weights. Catalog 55 covers aggregate, stone and ore washers and classifiers.

Since 1872

EAGLE IRON WORKS

EAGLE IRON WORKS
264 Holcomb Ave.
Des Moines, Iowa

Combine . . .

Continued from page 37

is installed will allow vehicles a 13-ft. 7½-in. headroom.

Fresh air will be blown into the tunnel through a duct under the roadway. Exhaust air will be sucked from the tunnel through a ceiling duct. Sides and ceiling will be tiled. The joint venturers have contracted to tile the ceiling while the sides will be tiled under later contracts.

The motorist will encounter low grades on his trip through the tunnel. The down ramp on the Jersey side will be 3.8%; the stretch to the center will be .3%. The stretch away from the center and approaching the New York terminus will be .6%; finally the New York up ramp will be 3.5%.

Big Equipment Show

Other equipment seen around the job site during *Excavating Engineer's* visit included six storage battery locomotives. These machines made by Goodman Manufacturing Co. haul 6-yd. cars around the yard. Later they become the pulling power on the tunnel railroad used during construction. Also in the yard were a Caterpillar - powered Bucyrus - Erie 38-B crawler crane and a Bucyrus-Erie 22-B Transit Crane. These rigs performed yard lifting at the time.

Affirming the expected long stay of the contractors are the many buildings on the site. In addition to the medical clinic and the pump and compressor buildings mentioned, there are the following: store room, machine shop, office building, and a change house for the benefit of the sand hogs.

The first Lincoln Tunnel tube was completed in 1937. Its twin was finished in 1939. The third is scheduled for completion in 1957. Before it is finished, it will probably cost in the neighborhood of $100 million. It is a commentary on the rising prices of all things large and small to hear that this is more than the cost of the other two tunnels together.

The Mason Johnson MacLean combine began their contract during November of 1953. They plan on completing their end of the job in three years, and there will remain one year's work before ribbon-cutting ceremonies.

Key Men

Representing the joint venturers on the job in addition to Mansell L. MacLean are the following key men: George L. Sager, general superintendent; Hugh E. Cronin, job engineer; Howard L. King, consultant and chief engineer of Mason & Hanger Co. and one of the world's leading experts on shield driven tunnels; L. J. Eibsen, mechanical engineer; L. Nadel, design engineer; and John Johnston.

Representing the purchaser, the Port of New York Authority, are these key engineers: John M. Kyle, chief engineer; Harry Druding, resident engineer on the job; H. George Decancq, construction engineer.

Heavy-Duty FLOOD LAMPS

For Better Light • Longer Service • Lower Cost

Especially Designed for Efficient Service on

Shovels • Excavators • Drag-Lines • Roadbuilding Equipment Locomotive Cranes • Tractors . . .

Metal Spinning Division

PHOENIX PRODUCTS CO.

4723 N. 27TH ST. • MILWAUKEE 16, WIS.

Write for Illustrated Bulletin.

New Equipment . . .

Continued from page 58

engine, and tips the scales at only 55 lbs.

"Star," Barnes 2-in. model has a 7,200 gph capacity, a Briggs & Stratton 2 hp power plant, and weighs in at only 65 lbs., still well within the limits of one man portability.

Barnes "Lightning" is the 3-in. model, with 18,000 gph capacity. Although the "Lightning" is powered by a 7.2 hp Wisconsin gas engine, the weight has been kept down to only 130 lbs., making even this extra high capacity pump easily transportable by hand.

All Barnes light weight pumps have Barnes patented self-priming principle

which gives quick, dependable priming with as little as ½ normal water level in the pump body. All models have non-clogging, trash type impellers, direct flow suction, automatic valves, and Barnes self-lubricated Super Seal.

Cold-Weather Extinguishers

Manufacturer: Ansul Chemical Co., Marinette, Wis.

Claims: A fire extinguisher that functions effectively at temperatures of 65° below zero Fahrenheit has been developed.

Originally designed to meet U.S. Air Force specifications for the Arctic and other cold weather areas, the extinguishers have a special rubber hose that is able to withstand the extreme cold without stiffening or cracking. Also, nitrogen, rather than carbon dioxide, is used to expel the extinguishing agent, which is a dry chemical.

Carbon dioxide is used to expel the chemical in Ansul's regular portable units, but because it freezes in the ex-

Continued on page 68

ALL PITS ARE DIFFERENT....

3-cu. yd. rapid shifter

THAT'S WHY
SAUERMAN SCRAPER MACHINES ARE JOB-ENGINEERED FOR YOUR PLANT

Your deposit may require a manually-shifted tail and bridle system or it may need a rapid shifter to make the many moves necessary in shallow pit operation or handling of non-caving material. If large capacities and long hauls are involved, a Sauerman Track Cable machine may best suit your needs. In the latter arrangement, the scraper bucket is attached by chains to a carrier traveling on a track cable. The bucket conveys its load at ground level and is discharged at the dumping point by merely tightening the track cable. Bucket and carrier guide glide back to the digging point at high speed when brake is released.

5-cu. yd. track cable scraper

Sauerman scrapers work equally well on hills, boggy ground or in deep water. One man controls digging, hauling and dumping from a safe location, which may be as much as 1,000 ft. from the deposit. Sauerman machines cost less than many other types of excavators of similar capacities. Operating costs are very low, because you eliminate the power cost involved in moving heavy machinery around the area. A drag scraper maintains its efficiency for many years. When parts are replaced—sheaves, clutch or brake linings—the machine is restored to practically new condition, even though it may be twenty or more years old.

Write to Sauerman's experienced engineers about your plant

They will give you specific recommendations without obligation. Request *Catalog A, Drag Scrapers*—24 pages of job photos and specifications.

SAUERMAN BROS. INC.

622 S. 28th AVE. | BELLWOOD, ILL.

Best bet for better bids–

SPECIFY
GENERAL MOTORS DIESEL POWER

in <u>all</u> your construction equipment

You can *specify* General Motors Diesel power in over 750 different models of equipment built by over 150 manufacturers.

When you do you'll get fast-acting, quick-accelerating 2-cycle Diesel power that will help you do more work, faster, at less cost.

More work, because a General Motors Diesel is a "high torque" engine. And torque—as much as developed horsepower—measures an engine's working ability.

Faster work, because a GM 2-cycle Diesel, with its responsive governor, efficient fuel injectors and power at every piston downstroke, gives you instant pickup in response to changing loads.

Less cost, because a General Motors Diesel burns fewer gallons of safer, cheaper fuel. Also a GM Diesel costs less to buy and the parts cost less than for other Diesels of comparable ratings.

No matter where your contracts take you, you'll find GM Diesel distributors ready to supply fast service and quick delivery of low-cost factory parts. Check your local distributor today for full details on dependable, low-cost Diesel power for your equipment, or write direct for more information.

PURCHASED 23 GM DIESELS SINCE 1947

This LeTourneau-Westinghouse Tournapull is part of an earth-moving fleet used by the Lone Star Steel Company of Lone Star, Texas. The Company, one of the largest producers of steel in the Southwest, has been a consistent user of General Motors 2-cycle Diesel engines in several different kinds of earth-moving, construction and mining equipment for better than seven years.

GM
GENERAL MOTORS
DIESEL POWER

SAVING $170.00 A MONTH IN FUEL ALONE

United Construction Company cut fuel costs over 60% and reduced maintenance costs when they *switched* from gasoline to GM Diesel power on their Moretrench pumps. The GM Diesels worked 24 hours a day, 7 days a week—eliminated stops formerly required to pull and service spark plugs every three days and to replace them every three weeks.

13,000 HOURS—NO REPAIRS

General Contractor A. H. Famularo bought this GM Diesel-powered Northwest 25 Crane in April 1947. In 13,000 hours he never had an injector out, never touched the head or pan. He burns 16 gallons of low-cost Diesel fuel in 8 hours—specified GM Diesel power "because it was economical . . . and has proved to be reliable."

25% MORE WORK; FUEL COSTS ⅓ LESS

Killough Construction Company has *standardized* on GM Diesel power for their portable rock crushing plant in Kansas. The firm uses six GM Diesels to run a hammer mill, operate conveyors and screens, a primary crusher and two shovels. One shovel, converted from gasoline to GM Diesel power, now does 25% more work on one-third less fuel cost.

"WONDERFUL PERFORMER"

This GM Diesel-powered scraper hauled nine yards every four minutes on a recent job for the R. J. Boe Construction Company. Contractor Russell Boe likes the "wonderful acceleration and trouble-free performance GM Diesel power gives me." He says, "All you need to do is keep water, oil and clean fuel in that GM Diesel and you'll get a good day's work out of it."

DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN

Single Engines . . . 30 to 300 H.P. • Multiple Units . . . Up to 893 H.P.

New Equipment . . .

Continued from page 65

treme cold, it was deemed inadequate for the cold weather extinguisher.

The new units are available in 4-pound and 20-pound capacity hand portable units and 150-pound and 350-pound wheeled units. In addition to the rubber hose, they are equipped with special nozzle and puncture pin seals to insure proper operation in extreme cold.

For severe low temperature operation below minus 40° Fahrenheit, the 150-pound and 350-pound wheeled units may be ordered with special low temperature rubber hose. The company has found that standard hose on these units is satisfactory down to temperatures of only 40° below zero.

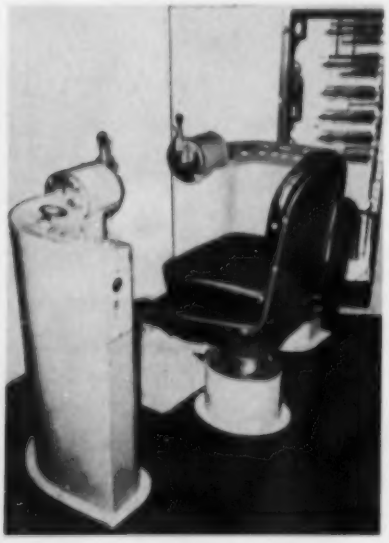
All the low temperature extingushers are painted blue to distinguish them from the regular red extinguishers used in temperate and tropical climates. They are priced approximately the same as the regular models, and may be obtained through the company direct or any of its branch offices in the larger cities.

P&H Control

Manufacturer: Harnischfeger Corp., Milwaukee, Wis.

Claims: The manufacturer is now offering electronic control as standard equipment on P&H electric shovels. The new control governs all shovel-operating motions.

Fully tested and proved under all field conditions, this new electronic control offers many advantages. More rapid signal response from controllers is achieved. This permits better coordination of shovel motions by the operator. There is greater ease of operation with the desirable stepless controller feature retained. Shovel cycle time is reduced because of faster response and the finger-tip ease of control.



For maintenance purposes, all electronic equipment is shock mounted on removable panels for easy accessibility. P&H electronic control is offered as standard equipment on P&H electric shovels from P&H Model 1400 (4½-yard capacity) through the P&H Model 1800, 8 cubic yard machine.

Self-Propelled Concrete Saw

Manufacturer: Eveready BrikSaw Co., Dept. 408, 1509 South Michigan Blvd., Chicago 5, Ill.

Claims: The Model E-25-PD concrete saw is equipped with a 25 hp 4 cylinder air cooled, gasoline engine that drives the saw under full load at speeds up to 12 feet a minute. Two abrasive coated wheels act as a smooth, positive friction drive to both rear wheels of the saw. The simplicity of this mechanism eliminates slippage, jerking, and bumping or twisting of the blade. Movement of the saw is smooth and constant.

"Power-Drive," as the self-propelling unit is called, is engaged or disengaged by foot pedals in easy reach of the operator. Cutting speed is quickly set by turning the control lever on the variable speed transmission.

Another factor which prevents blade binding and unnecessary blade wear is the Eveready "Tri-Matic" blade alignment—the blade is held straight in the cut, without twisting, when the saw wheels are passing over uneven surfaces. Although the "Tri-Matic" suspension of the front axle has the effect of providing a 3-point suspension of the blade, the saw chassis is firmly mounted on four wheels with solid rubber tires. The saw naturally tends to cut straight, without drifting—especially since motive power is supplied to both rear wheels. You do not have to "steer" the Eveready saw. Just set it on course and gently guide it. Straight cutting, also, helps protect the blade and gives it longer life.

Other features of Eveready Model E-25-PD are:

"Hydra-Eze" depth control—smooth hydraulic mechanism that raises and lowers blade without bumping.

Maneuverability—one man can tilt saw back on the rear wheels and move it quickly into position.

Dual mounting of blade guard and blade—you can cut on either side of saw.

Blade depth control—set for the depth of cut desired.

Accessibility of all controls—on the saw cowl before the operator, or as in the case of the foot pedals, within easy reach of his feet while sawing.

Convertibility—Saw can be furnished with or without "Power-Drive." "Power-Drive" kit can be obtained separately, and added later to any Eveready concrete saw. Other optional features of the saw are an electric self-starter and a water pump.

This new 25 hp Eveready concrete saw is a companion model to E-15-PD which was announced to the trade last spring. Model E-15-PD is powered by a 14.6 hp gasoline engine, but in all other respects is similar to the larger model.

New literature is available without cost.

HA Payloader

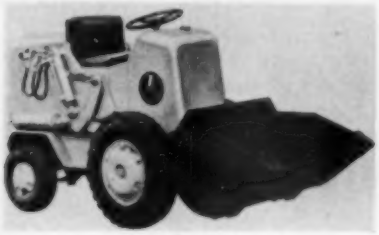
Manufacturer: The Frank G. Hough Co., Libertyville, Ill.

Claims: The smallest unit in the Payloader line, this new model has twice as much lifting, digging and carrying capacity as its predecessor. The bucket has been increased 16⅔% giving this new HA a payload capacity of 18 cubic feet and a struck-load capacity of 14 cubic feet.

Productive capacity has been increased from 50 to 100% and the maximum dumping height has been increased 18%. In spite of all these increases, this new Payloader is a more maneuverable machine with a shorter turning

radius than the former model. It can be operated into and out of box cars with ease.

An entirely different bucket arm design permits exceptional breakout action of the bucket and 40° of tipback. This new design makes it possible to carry



heaped loads at a lower level, thus providing greater stability and better operator vision.

New standards of operator safety and ease of operation result from a combination of the new bucket arm design, which keeps the arms below the operator's level, and a hydraulic accumulator which minimizes load shocks and stabilizes the hydraulic controls.

Torque converter drive and full-reversing transmission are combined to assure fast operating cycles and ease of operation.

A sealed and pressurized hydraulic system has been incorporated and double-acting rams operate the boom-arms and the bucket.

The ease of accessibility of all service points has been improved to assist better maintenance. Other new features include: improved steering; new solenoid starting controls; new ignition lock; dust-proof distributor; improved bucket construction; hose connectors; sealed grease fittings; new pin lock design; improved ground clearance; increased drawbar pull; new parking brake and many others.

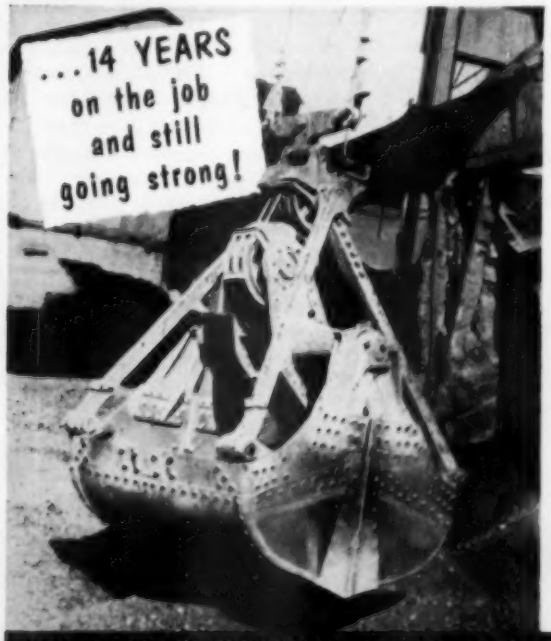
Motorized Wheelbarrow

Manufacturer: Worthington Mower Co., Stroudsburg, Pa.

Claims: The new Worthington wheelbarrow, termed the Workhorse, promises to be a welcome piece of equipment on any job where wheelbarrows are used. Utilizing an easy-to-start 4-cycle, 2½ hp motor mounted on supports behind the tray, the Workhorse can carry a full, 400-lb. load up a 16% grade without hestitation and very little effort by

the operator. Throttle and clutch controls are located on the wheelbarrow handles, making starting and speed control a smooth, easy and natural motion. Speed can be maintained at an easy walking pace. Semi-pneumatic drive wheels have a thick tractor tread which enables the wheelbarrow to ride and drive over rough, irregular ground without trouble.

A rear caster wheel permits the Workhorse to be spotted in position accurately with merely a twist of the handles. Two drive wheels directly under the load eliminate tipping. The tray is so balanced that dumping is a simple, rather than a back-breaking job.



Here's a typical service record of
BLAW-KNOX
CLAMSHELL BUCKETS

This 3-cu. yd. lever arm bucket is still in service after 14 years on the job . . . a typical work record for Blaw-Knox Clamshell Buckets.

Over 50 years experience has taught Blaw-Knox engineers the fine points of bucket manufacture . . . where to build in the extra strength to withstand the abuse of severe conditions . . . how to design buckets to meet the exacting needs of an exacting industry . . . how to analyze *your* job requirements to help you select the specific size, weight and type of bucket you need.

There are Blaw-Knox Buckets designed for excavating, dredging and the rehandling of over 480 listed materials! Ask your Blaw-Knox distributor to help you select the right bucket for your job.

BLAW-KNOX

BLAW-KNOX COMPANY
CONSTRUCTION EQUIPMENT DIVISION
Pittsburgh 38, Pa.
Offices in Principal Cities

ASK ABOUT THE BLAW-KNOX "Complete Package" OF CONCRETE PAVING AND READY-MIX EQUIPMENT

Highway and Airport Paving Forms • Precision Subgraders • Aggregate and Bulk Cement Batching Plants • Concrete Spreaders and Finishers • Concrete Pavers • Road Wideners • Base Pavers • Bituminous Pavers and Finishers • Tandem and Trench Rollers • Truck Mixers • Truck Mixer Loading Plants • Concrete Buckets • Curb, Gutter and Sidewalk Forms.

New Trade Literature

Subject: **Office Equipment**
Content: A new catalog has just been published by the General Industrial Co. Office equipment and other industrial items are vividly illustrated.
Where to get: General Industrial Co., 5725 N. Elston, Chicago 30, Ill.

Subject: **Adams Motor Graders**
Content: Adams Motor Graders 440 and 330, powered by 100 and 75 hp diesel engines respectively, are described in a new highly-illustrated catalog just released by the manufacturer. The catalog covers the construction of these graders, their operating advantages, and shows the machines' application to a wide variety of work. The various blade positions are pictured along with detailed views of Adams constant-mesh transmission, the full-floating rear axle and detailed engine views. Also described and pictured is a wide variety of optional equipment that adds to these graders' usefulness, such as scarifier, bulldozer, "V" type snow plows and wings, rotary snow plow.
Where to get: Any Adams dealer or write Adams Division, LeTourneau-Westinghouse Co., Indianapolis, Ind.

Subject: **Equipment Costs**
Content: *Look at the Last Cost First* is a 12-page booklet made available by Caterpillar Tractor Co. for public officials. This booklet includes pictures and testimonials of municipal leaders explaining why the overall cost of a job or equipment must be considered and why the low bid is not necessarily the best one.
Where to get: Any Caterpillar distributor or write Caterpillar Tractor Co., Peoria, Ill. Ask for D503.

Subject: **Pipe for Piling**
Content: Bulletin No. 542 *Taylor Forge Foundation Pipe* is offered by Taylor Forge & Pipe Works. The bulletin describes the characteristics of Taylor Forge Foundation Pipe for Piling and illustrates its application in the construction of bridges and buildings. In addition to photographs showing the actual pile driving operations, which were part of two construction projects in process on the East and on the West coast, the bulletin also gives reproductions of the pile driving logs. Sizes of pipe commonly used for piling are listed and driving ends preparations, i.e. drive sleeves and drive points, are shown.
Where to get: Bulletin 542 is available upon request from Taylor Forge & Pipe Works Inc., P. O. Box 485, Chicago 90, Ill.

Subject: **Airco Welding Supplies**
Content: Air Reduction Sales Co. offers a new 36-page catalog covering their complete line of arc welding and oxyacetylene welding supplies and accessories. Included in this booklet are welding rods, fluxes, brazing alloys, goggles, helmets, shields, electrode holders, protective clothing, cable, clamps, hose, lighters, cylinder trucks and carrying cases.
Where to get: Request a copy of this catalog, form ADC 848, by writing to Air Reduction Sales Co., 60 East 42nd St., New York 17, N.Y.

Subject: **Hyster Crane-Excavator**
Content: A twenty-page brochure which describes the Hyster Hystaway Excavator-Crane mounted on new or used Caterpillar D6, D7 or D8 track-type tractors is now available. The well illustrated booklet explains on-the-job advantages of the Caterpillar-built tractor with dozer blade and Hystaway which can be quickly converted to either shovel, backhoe, dragline, crane, clamshell or pile driver. The Hystaway is shown in use for pipe line trenching, open pit mining, sewer jobs, irrigation ditches, erecting transmission poles, loading logs, pile driving, channel dredging, power line construction and railway maintenance. Specifications of each Hystaway job attachment are given.
Where to get: Caterpillar-Hyster dealer or write the Hyster Co., 2902 N.E. Clackamas, Portland 8, Ore. Request Form No. 1235.

Subject: **Concrete Batching and Mixing**
Content: A series of articles discussing the fundamental principles of *Concrete Batching and Mixing* has been reprinted under one cover and made available for general distribution by the C. S. Johnson Co. of Champaign, Ill. Subject matter of the Concrete articles is presented as a frank discussion of the history of concreting for all types of structures and surfaces up to the present time; equipment selection, its application and mainte-

Continued on page 72

"Get yourself one—you'll be surprised at Diesel fuel economy."

Power controlled load lowering is one of the features the operator likes best about this 22-B. It helps him set pipe into position quickly and accurately. The job is part of a 10-year flood control project in Los Angeles county.

TIGHT SQUEEZE

But Bucyrus-Erie 22-B Transit Crane Makes It Look Easy

This job, located along a narrow, tree-lined residential street in Pasadena, California, required the use of a compact clamshell-crane. A storm sewer trench had to be dug through tough decomposed granite and clay. Then, concrete pipe varying in diameter from 45 to 75 inches had to be installed.

The contractor on the job made the best possible choice: he put a Bucyrus-Erie 22-B Transit Crane to work. Assignments like this are tailor-made for this machine. It's easy to move around with its rubber-tired carrier — can work in tight, narrow quarters. You can use it, as this contractor did, for both excavating and crane work—clamshell, orange peel, and dragline are all operated on the regular crane boom. Above all, it's dependable—a machine you can count on for steady high production every time it starts a job.

Bucyrus-Erie Transit Cranes are available in two sizes — the 15-ton Model 15-B, the 25-ton Model 22-B. Your nearby Bucyrus-Erie distributor can give you complete information.

97E55C

Boom folding mechanism (optional equipment at extra cost) permits crane booms 60 feet and longer to be folded with jib suspended underneath for moves between jobs.

BUCYRUS ERIE

South Milwaukee, Wisconsin

New Literature . . .

Continued from page 70

nance; production factors and job engineering. The material and data are a comprehensive reference and guide for those who work either regularly or occasionally with concrete. The 44 page booklet is divided into eight chapters and deals with such basic topics as portable and semi-portable batching plants, single and multiple materials batchers, weighbeam and scale adjustments, highway, airport and ready-mix concrete plants, permanent plant facilities and controls for large, mass concrete plants.

Where to get: Free copies of this informative booklet may be obtained from any Johnson equipment dealer. Ask for *Concrete Batching and Mixing* reprint, form No. KJ414, or write direct to the C. S. Johnson Co., Champaign, Ill.

Subject: **Instruments**

Content: The complete line of Gurley surveying and engineering instruments—including transits, levels, alidades and many others is described in the newly-revised edition of Catalog 10, just published. In addition to detailed information and illustrations of the lines produced by the Engineering Instruments Division, the bulletin includes a cross-sectional drawing of the Gurley Precise Transit and photographs of the manufacturing facilities at the Troy plant. Transits described include the Hell Gate Precise Transit—both Engineers and Mountain and Mining models; Standard Precise Transit—Engineers and Mountain and Mining models; the Gurley Telescopic Solar Transit; the Standard Precise Mining Transit; and the Optoplane Precise Transit, for industrial use. The Gurley Wye and Dumpy Levels, as well as Standard and Explorers Alidades, plane table outfits, tripods, rods, current meters, water level recorders, and other products are featured.

Where to get: W. & L. E. Gurley, Troy, N. Y.

Subject: **Hose**

Content: Four new industrial hose catalogs in color, covering the Boston line of welding, steam, air and petroleum hose, are announced by Boston Woven Hose & Rubber Co. The catalogs list the recommended uses, construction, and specification as to size, weight, and recommended working pressures. Cutaway illustrations show the construction of each type of hose.

Where to get: Boston Woven Hose & Rubber Co., P. O. Box 1071, Boston 3, Mass. Specify which catalogs you want (steam-air-welding-petroleum).

Subject: **Everett Trencher**

Content: New booklet illustrating the Model 60 Everett Trencher is released. It is designed to dig trenches up to five feet deep as fast as 300 feet per hour. Illustrations in the new trencher booklet show close-up views of the hydraulic drive on conveyor, the belt slip clutch, the independent hydraulic system and the bucket line. An interesting sequence of cartoon line drawings point out the operational benefits of the trencher's new design. Overall photos and pictures of the equipment in action are also reproduced in the booklet, as well as complete specifications on the Model 60 Everett Trencher.

Where to get: Earth Equipment Corp., 2036 Sacramento St., Los Angeles 21, Calif. Ask for Bulletin 60 Trencher.

Subject: **Heil Truck Bodies**

Content: Two new literature pieces describe Heil equipment. Bulletin BH-55101 highlights construction and design details of the two cubic yard and up body. Features of the dump body illustrated are: V-section-braced sides for full capacity loads; solid, one-piece corner posts; a reinforced, box-braced tailgate; all-steel tailgate hinges; and a V-bend reinforced body head section. Design features shown utilize a photograph and line drawing technique to spotlight details covered in the accompanying copy. Complete specifications and a listing of optional equipment available are found on the back of the bulletin. Also available for the first time is a new four-page illustrated bulletin, BH-54120, covering the entire line of Heil truck equipment. Featured in the new literature are Heil dump bodies and twin arm hoists, lightweight telescopic hoists and dump bodies designed exclusively for them, conversion hoists, rock bodies, Colectomatic sanitary refuse units, Colecto-Pak garbage bodies and Heiloader hydraulic elevating truck tailgates. Photographs, specifications and descriptive copy fully cover each of the units. One full page of pictures features action photos of Heil equipment at actual job locations.

Where to get: Heil body and hoist dis-

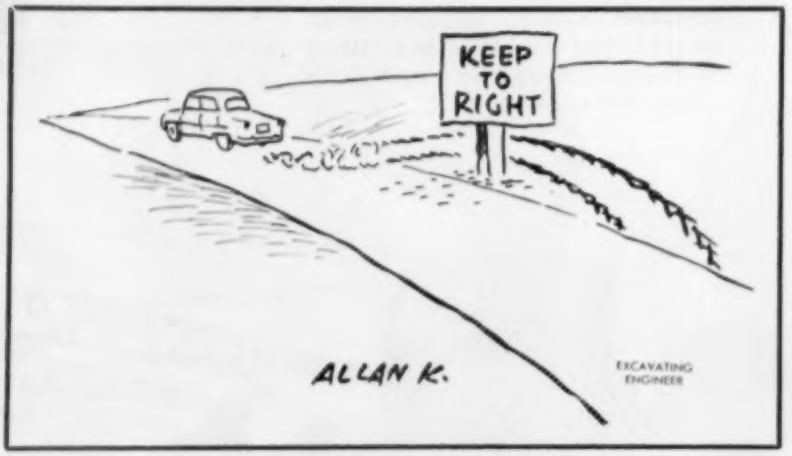
In a Hayward, there's no contact between the closing mechanism and the gravel or other materials handled. To be sure—this "no contact" feature is only one advantage. But a very important one to you—since it means much less wear, reduced upkeep, and a significant dollar-saving in bucket maintenance.

The Hayward Company, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

GRAB SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888



tributors and from The Heil Co., Milwaukee 1, Wis. Ask for numbers given above.

Movie . . .

Subject: **Adams TraveLoader**

Content: A new full-color, sound movie on the Adams TraveLoader has just been released. The film, about 15 minutes in length, shows the TraveLoader on a wide variety of applications by state highway departments, counties, cities, contractors and materials yards on windrow and stockpile operations. The film features the use of Adams motor graders and the TraveLoader in restoring drainage on county roads by cutting off high shoulders and cleaning out ditches. Also it shows the machine cutting and loading top soil out of the flat, loading trucks with a cross conveyor attachment and loading snow.

Where to get: Showings of the film may be arranged with local Adams dealers.

Notes from the Manufacturers

Hercules Powder Co., Wilmington, Del., names Cliff A. Mace as division manager of explosives sales. Mace will assume the duties formerly handled by H. Merrill Lynch, who retired at the end of 1954 as assistant director of sales. Julian O. Schofield is appointed assistant division manager of explosives sales. Mace joined Hercules' Explosives Department in 1933, following his graduation from the University of Minnesota. Schofield, a native of Maryland, joined Hercules in 1921.

McKiernan-Terry Corp., announces the appointment of G. Robert Compton, Jr. as Manager, Pile Hammer Division Sales and Service, following the recent death of Earle R. Evans who had headed that division of the company. Compton had been assisting Evans in the management of this division for a number of years. His headquarters will be at the company's plant at Dover, N. J.

Timken Roller Bearing Co., shows sales staff its new plant in operation. For the first time since the new Bucyrus, Ohio, plant of the Timken Roller Bearing Co. started producing bearings, the company's sales force saw the plant in operation. Production in the new plant was started in March, 1951, and full production was reached in 1952. However, because of the completely new approach to the manufacture of tapered roller bearings, no one, outside of Bucyrus plant employees and the company's key executives from the home office in Canton, Ohio, has been permitted to enter the plant. Small, high-production sizes like those used in the automotive and farm equipment industries are produced at Bucyrus on the most nearly automatic assembly lines of any parts produced for industry. The bearings are untouched by human hands from the time the seamless tubing is placed in the automatic screw machines until the finished, packaged bearings are taken off the

Continued on page 74

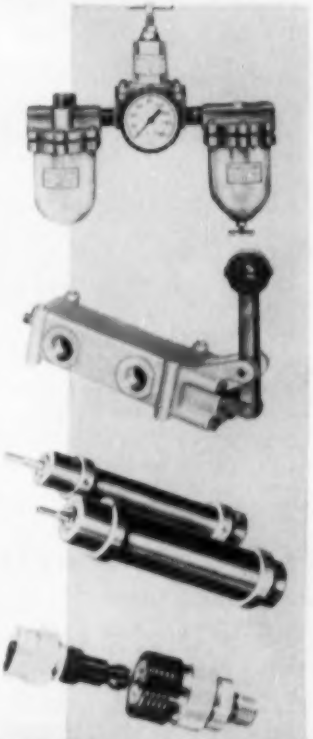
PNEUMATIC NEWS from Westinghouse

NEW LUBRICATION CONTROL . . . This new Westinghouse Type R-1 Lubricating Control Unit gives your air system complete protection. It accurately regulates air pressure—prevents air waste and excessive pressure. It regulates the injection of oil in proportion to the amount of air . . . meters the flow . . . atomizes the oil. It removes water and solid particles from the air stream. One size handles *all* requirements from 4 to 85 *cfm* at pressures up to 125 psi.

NEW FLOW VALVE . . . This new Westinghouse Type "D" Pilotair Valve controls the flow of air, oil, or water at pressures up to 250 psi. It comes as a two-way, three-way, or four-way valve with lever, treadle, pedal, button, cam, solenoid, or pneumatic operation. New seal and construction assure long life and low maintenance.

CYLINDERS . . . Westinghouse makes them in diameters from 1½" to 10", with stroke lengths up to 42". Single or double acting, with or without adjustable cushioning, for foot, flange, or pivot mounting.

PLUG-IN COUPLERS . . . Westinghouse makes these full-flow, heavy-duty, quick couplers in both the Push Type, which can be connected and disconnected with one hand, and the Sleeve Type. Two series available: Interchange, for use with other makes of couplers, and Standard.



FOR QUICK SERVICE LOCALLY

. . . and complete facts about the Westinghouse line of quality pneumatic controls, consult the Westinghouse Air Brake Distributor listed in the classified phone directory under "Cylinders: Air."

Westinghouse Air Brake COMPANY

Industrial Products Division

WILMERDING PENNSYLVANIA

Notes . . .

Continued from page 73

end of the line. The two new high-production, front wheel bearings designed by Timken Company engineers and recently adopted by automobile manufacturers are examples of what can be done with the new plant to provide industry with high-quality, low-cost bearings. To make this possible, an investment of approximately $9 million was made in plant and equipment, or a total of about $23,000 per hourly employee. Approximately 65 executives and sales personnel made the trip through the Bucyrus plant recently and afterwards listened to an explanation of the facilities and were given figures on production, capacity, etc.

Koehring Co., Milwaukee, Wis., announces that the Foster-Bell Co. will handle the complete line of Koehring heavy-duty construction equipment along with products of the three Koehring subsidiaries, C. S. Johnson, Parsons and Kwik-Mix in the entire state of South Dakota. Working out of their main office located at 1001 East 14th Street in Sioux Falls, the new dealer will cover the entire State of South Dakota. A branch office has been established in Aberdeen, S. D. The complete line of Koehring equipment now available under Foster-Bell representation includes: Koehring excavators, cranes, draglines, Dumptors pavers, finishers, Mud-Jacks and construction mixers; C. S. Johnson Co. aggregate and cement plants, batchers, bins, storage silos, concrete and clamshell buckets; The Parsons Company Trenchliners, a complete range of crawler and rubber tire mounted trench excavators; and the full Kwik-Mix line of concrete, bituminous and plaster-mortar mixers as well as the revolutionary Kwik-Mix power wheelbarrow and fork lift unit called the Moto-Bug.

Macwhyte Co., Kenosha, Wis., discloses that Francis D. Holden has been appointed Manager of Sales of Macwhyte Co., effective Feb. 1, 1955. Holden was Assistant General Sales Manager which position he held since Dec. 1, 1948. He was employed by Macwhyte Company during school vacations while he attended Lawrence College. After graduation, he was re-employed by Macwhyte Co. in 1934 in the General Sales Department. In October of 1943 he entered the Naval Service, became a lieutenant and at the close of the war returned to Macwhyte Co. to the General Sales and Export Divisions. In all, Holden has had more than 20 years experience in Macwhyte Co. General Sales and Export Divisions.

The Frank G. Hough Co., Libertyville, Ill., has just announced the promotion of G. A. Gilbertson and R. L. Beyerstedt to Executive Vice Presidents. Gilbertson, formerly Vice President in Charge of Sales, Advertising and Service, is now Executive Vice President and General Manager. In his new capacity, he will assume responsibility in assisting Frank G. Hough with overall management and policy matters. Beyerstedt, formerly Vice President and Chief Engineer, is now Executive Vice President in Charge of Engineering and Product Development and will have additional responsibilities with respect to the company's accelerated product development program.

International Harvester Co., Chicago, Ill., has appointed Walter H. Tudor as Industrial Power Territory Manager of the Chicago area. Tudor will be in charge of contacts with distributors in the area for the distribution and sales of International industrial power products. His territory includes all of Wisconsin and the northern two-thirds of Illinois. IH also announces the opening of a separate motor truck district sales office in Jacksonville, Fla. Harvester's new motor truck district office will be managed by W. K. Perkins, for many years the company's manager of motor truck sales, motor truck division, in Chicago and, more recently, an assistant to the vice president. Perkins comes to Jacksonville at his own request, following a serious illness from which he has now recovered. He is widely known, both with the company's motor truck dealer organization and with motor truck users here. R. G. Walls, also a former assistant to O'Donnell and a long-time resident of Jacksonville, has been appointed assistant district manager of the company's new motor truck sales facility. The district office will be located in the Harvester Building at 1986 W. Beaver Street, a facility built by the company in 1953.

L. B. Foster Co. reveals that Charles Kenneth Scott, who recently retired as Engineer in Charge of Maintenance of Way of Erie Railroad's eastern division, has become associated with L. B. Foster Co., suppliers of railroad trackage for industry, steel sheet piling and pipe. Scott, a graduate civil engineer from Rennsalaer Polytechnic Institute, will be located at L. B. Foster Company's New York office.

Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, O., announces the appointment of N. C. Ribble Co., P. O. Box 856, 1304 North Fourth St., Albuquerque, New Mexico, as distributor for Lima shovels, cranes, draglines and pull shovels. The distributorship covers the entire state of New Mexico with the exception of the seven extreme southern border counties.

Electric Steel Foundry Co., Portland, Ore., names Fred J. Acord to serve the Middle Atlantic territory as district representative. In this capacity Acord will spend the bulk of his time servicing the company's construction equipment dealers under the ESCO New York branch. Acord's address is 618 Aldworth Road, Baltimore, Md.

Blaw-Knox Co., Pittsburgh, Pa., announces that the Parts and Services Department, presently located at Springdale, Pa., will be moved to

Keep Jobs Moving!

At The Same Time

SAVE HALF on
Diesel Fuel Injection Maintenance Parts the HANCOCK Way

Some Examples of How Hancock Saves You Money

Caterpillar Nozzle—Hancock reclaimed, pop pressure set gaskets furnished, ready to install, any size, only $10.70

Caterpillar Pump—Hancock reclaimed, tested, calibrated, 7-8-10 MM, right or lefthand helix, only $12.00

GMC, Nos. 71, 110—We reclaim complete Injectors; similar service on Cummins, American Bosch and International Injection Equipment.

WRITE FOR CATALOG

In Most Areas You Get Quickest Service From Your Nearby Diesel Injection Service Shop.

If There is no Hancock Dealer in Your Area, Send Worn Parts Direct to Factory (Parcel Post or American Express, prepaid), to:

HANCOCK
DIESEL SERVICE CO.
372 Walnut St. Findlay, Ohio

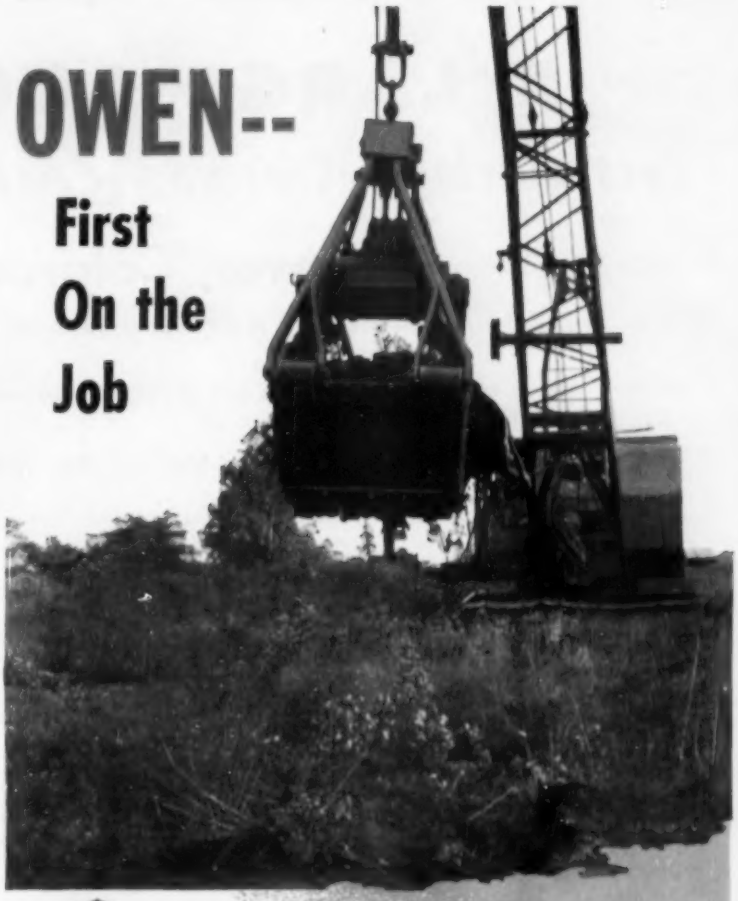
Mattoon, Ill., in late 1955. C. W. (Curt) McIntyre was named manager of the new Parts and Services Department. The move is connected with the shift of production facilities for the Blaw-Knox package line of road equipment from Blawnox, Pa., to Mattoon, Ill., where a new plant will be under construction early this year. Parts and services for other lines of equipment, exclusive of road construction machinery, will be handled through Blaw-Knox Co., Blawnox. While Parts and Services for road equipment will not be moved to Mattoon until late in 1955, McIntyre's appointment was immediate, in order to fill the vacancy created when Jack Pare, former head of this department, died last month.

Caterpillar Tractor Co., Peoria, Ill., reveals expansion of its dealer administrative organization by creating two divisions west of the Rockies. Effective the 1st of March, the company will split its Western Division into two parts: the Northwest Division and the Southwest Division. Both will headquarter in San Leandro, Calif., until office space is available in the new Equitable Life Building being constructed in San Francisco. Several personnel changes have been announced as a result of the change. Staffing the Northwest Division will be J. A. Justeson, sales manager; Harrison Welch, service manager; Elwood F. Trantina, parts manager; and E. J. Schlegel, credit manager. Assistant managers will include Frank McNamara, sales; E. P. Barta, service; and R. F. White, parts. Managers in the Southwest Division will include: Ben L. Hagglund, sales; Nick Kent, service; J. E. Ferguson, parts; and Robert Talbott, credit. Assistants will be Frank S. Foster, sales; R. G. Overpack, service; and J. F. Nullmeyer, parts. W. E. McCoy becomes sales manager of the Eastern Division and Fred V. Jacobs becomes sales training manager. Reassignments in other divisions of the Service Department include: E. M. Iverson, manager, and R. E. Johnson, assistant manager, Plains; H. C. Pertz, manager, and T. R. Wolfarth, assistant, Central; and B. T. Smith, manager, and R. R. Bessler, assistant, Eastern. Caterpillar also reveals other personnel changes. A. C. "Burt" Kraft, who has been district representative in

Continued on page 78

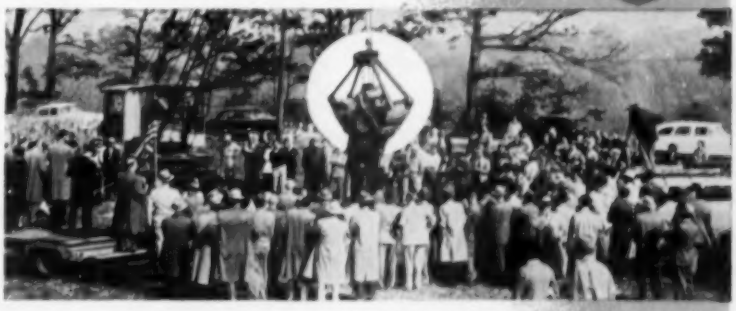
OWEN--

First On the Job



An Owen bucket takes the first bite for National Engineering & Contracting Company on the 55th Street intersection of Cleveland, Ohio's multi-million dollar freeway.

One of their many Owen buckets breaks ground for the Horwitz Co. of Cleveland, Ohio at the opening ceremonies of Ohio's 241 mile, 326 million dollar turnpike at Peninsula, Ohio.



"A mouthful at every bite"

Yes, Owen buckets are first on the job—and first in demand for those who want greater digging power, quicker opening action, and more rugged construction.

Write today for free illustrated catalog.

THE OWEN BUCKET CO.

6095 Brookwater Avenue • Cleveland 3, Ohio

Branches: New York, Philadelphia, Chicago, Berkeley, Calif., Fort Lauderdale, Fla.

A LARGE AUCTION

Earthmoving — Crushing — Asphalt Equipment

Denver, Colorado

MONDAY, MAY 16, 8:30 A.M. (MST)

Location: Sale will be held at the Monaghan yard at the Northeast part of Denver (Derby, Colo.). East 64th Avenue and Kearney.

Each piece positively sells to the highest bidder without any limit, minimum or reservation!

All of the equipment is owned by the J. H.-N. M. Monaghan Construction Co., it is a complete dispersion, as they are quitting business; almost every piece, large or small is in very good condition. WRITE—WIRE—CALL AUCTIONEERS FOR COMPLETE SALE BILL!!!

CRAWLER TRACTORS: Two CATERPILLAR McCoy Special D-8's, 2U 19875 and 2U 6175, both push tractors; CATERPILLAR D-8, S/N 21352 w/Cat 'U' dozer and #25 DDPCU; Eight CATERPILLAR D-8's from 2U 4392 to 2U 14080SP, some w/dozers and DDPCU's; Three CATERPILLAR D-8's, 8R's, 2 w/LeT DDPCU's; CAT D-4, 7U 22834SP w/Austin overshot loader, 751 hours.

SHOVELS—CRANES—DRAGLINES—BUCKETS: LORAIN Model 820-K crane-dragline, 2 yds., complete; BUCYRUS-ERIE 54B shovel, complete, completely overhauled; B-E 54B crane-drag boom 70'; HENDRIX drag buckets, 2 to 4 yds.

CRUSHING PLANT—CRUSHING EQUIPMENT—ASPHALT EQUIPMENT: CEDAR RAPIDS Master crusher, a complete, portable crushing plant, new in '52; PIONEER Primary Crusher, model 2036 jaw crusher, very good; CEDAR RAPIDS 50'x30" conveyor; PIONEER reciprocal feeder; Grisley 15"; PIONEER NUMBER 101 CENTRAL HOT MIX ASPHALT PLANT, diesel power for the complete 101 plant, has been used only 2 seasons; Model L Cummins diesel power plant; Asphalt storage tanks from 4,750 gal. up to 20,000 gal.; BARBER GREENE 879A lay down machine; Etnyre distributor; Barber Greene 848 asphalt mixer; B-G bucket loader; Bros oil or asphalt heater; Seaman pulvi-mixer; 3 pneumatic rollers; chip spreader, power broom.

MOTOR SCRAPERS: 2 EUCLID motor scrapers, S/N 14TD 15250 and 14TD-T15581, Cummins diesel, 20 yd. struck, excellent; 2 CATERPILLAR DW-20's, complete; 7 CATERPILLAR DW-10 tractors w/Cat bottom dump wagons, IV series, all good; Cat DW-10 hyd.

SCRAPERS—EUCLID REAR DUMPS—LOADER—GRADERS: 3 LeTOURNEAU Model W scrapers, single tires; 3 Euclid model 65 FD end dump trucks; Euclid loader, Cummins diesel; 5 CATERPILLAR No. 12 patrols, S/N's 8T 304 to 8T 10834, 4 w/scarifiers, all have big tires all around; 2 Cat No. 12 patrols, 7T series; Cat elevating grader.

TRUCKS—COMPRESSORS—MISC: ELEVEN IHC 1953 210-11 heavy duty tandem dump trucks, complete, real trucks, excellent; TEN GMC model 620 tandem trucks w/Anthony or Heil 10 yd. steel dump beds, complete, very good; 2 '52 and 1 '51 White tandem dump trucks; '49 MACK Model LJ truck tractor w/Cummins 200 hp diesel engine, complete; 21 other trucks and pickups; HUBER tandem 8-10 ton roller; 2 GALION tandem 8-10 ton rollers; HUBER 3 WHEEL 10T roller; Gardner Denver approx. 686 cfm compressor; G-D approx. 445 cfm compressor; 2 shop comp.; DD sheepfoot; 2 Murphy 30T pitless scales; Webb 30T scale; 3 large rippers; Fruehauf-Carter 40' float, tandem; 37' float, tandem; 11 other trailers from complete cook house to tool houses; steam cleaners; lite plants; water pumps; and many many other items large and small.

INSPECT THE EQUIPMENT AT ANYTIME. REMEMBER, ALMOST EVERY PIECE IS IN A-1 CONDITION!!!

WRITE—WIRE—CALL AUCTIONEERS FOR COMPLETE SALE BILL!!!

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT ANY LIMIT, MINIMUM OR RESERVATION!

J. H.-N. M. Monaghan Construction Co., Owner

Phone Atlas 82694, Denver, Colorado

FORKE BROTHERS

the Auctioneers

321 Sharp Bldg. Lincoln, Nebraska Phone 2-1045

— EQUIPMENT AUCTION LEADERSHIP SINCE 1921 —

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Model 95 Northwest dragline-crane combination with 100 ft. boom, 20 ft. jib, live boom, 38" treads, fairlead, tagline, 3 cu. yd. dragline bucket; also there is a new 2½ yd. backhoe attachment for model 95 Northwest. Box 3663

Bucyrus-Erie model 150-B Ward Leonard electric shovel, pushbutton starting, separately driven exciter, Tri-Ten dipper handle, available with six cu. yd. rock dipper or special seven cu. yd. dipper; serial No. 101329; shipped August, 1953; excellent condition; location: South Dakota. Box 3598

Manitowoc model 4500 dragline, serial 4596 delivered new December 1952; 6 yd. dragline bucket built to our special order; has done very little work and in first class condition; equipped with 1250 H.P. 12 cylinder engine with torque converter; $140,000 F.O.B. cars, Hanna, Wyoming. Nugget Coal & Timber Co., Midland Svgs. Bldg., Denver, Colorado.

Bucyrus-Erie model 120-B electric shovel, excellent mechanical condition, new in 1949, located in Minnesota, priced to sell. Box 3566

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Model 54-B dragline serial No. 102641, shipped new in March 1953; equipped with 90' boom, pendant suspension, high A-Frame, light plant, oversize mounting, extra counterweight, powered with NHRS Cummins diesel engine and torque converter; machine in excellent condition and used very little; location Kansas City; will demonstrate. Box 3662

Lima model 34 size ¾ cu. yd. Paymaster clamshell machine, serial #896, 35' crane boom, Buda gasoline engine, electric starter, no bucket, reconditioned, excellent buy.

Loader: New Trojan model LC-100-B demonstrated several times; gas engine, torque convertor, 1 yd. bucket; excellent bargain.

Crane and Backhoe: Used Osgood Invader ½ yd. powered by gasoline engine; 40' crane boom; Rudomatic tagline and dragline fairleads. Stuart M. Christhilf & Co., Inc., 134 W. Mt. Royal Ave., Baltimore 1, Md.

Osgood 1¼ yd. shovel, model 720, equipped with Cummins diesel, purchased new in November 1951; good working condition; priced for quick sale or will trade for ¾ yd. crane or shovel in good condition. J. P. Waite Construction Co., 3508 W. Pierce St., Milwaukee, Wis., EV 4-1900.

For sale or will rent at A.G.C. rental rates Bucyrus-Erie 54-B dragline, long and wide caterpillars, maximum 80' boom, Buda 1879 diesel engine, serial #50753; machine in excellent condition. Carveth Construction Co., Lincoln, Nebraska.

Byers 83-CC ¾ yd. truck crane w/100' boom. $15,000
Bucyrus-Erie 22-B ¾ yd. crane w/60' boom. $7,500
Two 210 c.f.m. Gyro-flow compressors (1953). $5,000
LF 192 International Harvester tractor w/Martin Lowboy trailer (new 1951). $10,000
Shovel, back hoe, clamshell and drag buckets available. Box 3661

MISCELLANEOUS EQUIPMENT

Two dragshovel attachments, equipped with large buckets for use on 22-B Bucyrus-Erie machines. The Lorenz Equipment Co., 547 W. Rich St., Columbus 22, Ohio.

Locomotives, 10 to 100 tons, diesel, gas.
Cranes, draglines, shovels, 1½ to 23 yds.
Crushers; jaw, gyratory, 24" to 48".
Trenchers, Parsons 310, 250; Buckeye 160.
Dump cars (150), 10-ton V type, 36" ga.
Diesel marine engines; gener. sets (6).
Monighan Walker dragls., 12, 7, 5, 3, yds.
Whirley portal gantry cranes, American.
Dredges, hydr., diesel, elec., 20", 12".
Yuba electric 6' gold placer dredge.
Page 10-yd. diesel walker drgl., 140' bm.
Euclid, Mack diesel trucks, 15-30 tons.
H. Y. SMITH COMPANY
828 North Broadway Milwaukee 2, Wis.

Two new and unused 5 yd. Amsco shovel dippers with bail and door, renewable teeth, and renewable teeth adaptors; fit 120-B shovels.
New and unused B-E #216919A dipper bail with equalizer yoke, lock pin, padlock sheave and pin assembly; fits 120-B shovel.
Used 5 yd. 120-B Bucyrus-Erie bucket less door; (above bail mounted on this door).
New and unused B-E #319001-5 5 yd. 3-piece dipper door. Peter Kiewit Sons Co., 1024 Omaha National Bank Building, Omaha 2, Nebraska.

Osgood model 200 backhoe, gasoline engine, serial #4802; excellent condition, $5950. Dow & Company, Inc., 1820 Elmwood Ave., Buffalo 7, New York. Phone: Victoria 4100.

Six cubic yard dipper and Tri-Ten handle for Bucyrus-Erie 150-B Shovel; slightly used but in excellent condition. Box 3588

One 60 foot crane boom for Bucyrus-Erie 54-B shovel, complete with sheaves for boom cable and drum for crane operation; in excellent condition; price F.O.B. Toledo, Ohio: $2500. Box 3664

New 18" dredging pump, rectangular cross section casing, high alloy steel liners, high alloy cast steel 4 vane runner; spare liners. Box 3587

Complete dragline equipment including 90 ft. boom less bucket purchased for Bucyrus-Erie 100-B, serial No. 23067, unused, price: $5,000. Morrison-Knudsen Company, Boise, Idaho.

Two Caterpillar D-8 tractors, 2U series, with #25 cable controls, 8A angle dozers; two LP scrapers 10-12 cu. yd. R. C. Micotto Const. Co., 6918 Lansdowne, St. Louis 9, Mo., Phone: Sterling 1-6970.

EQUIPMENT WANTED

Wanted: Power boom lowering attachment to fit Koehring crane model 304 and 604. Willy Boutin, 3281 Mont-Joli Street, Montreal North P.Q., Canada.

POSITION WANTED

Position wanted as a shovel crane or dragline operator; prefer Bucyrus-Erie, Koehring or Northwest; can repair or rebuild all machines; can also operate concrete mixers of all sizes; seven years experience running washing and crushing plants; 35 years experience in the construction field; 3 years in South America; married and do not drink; willing to go anywhere. George Stammer, 306 Fort Howard Avenue, West De Pere, Wisconsin.

Superintendent available. 30 years experience and qualifications covering hi-ways, airports, large sewers, water lines, heavy and light excavating; all types; know cost and modern equipment; sober, honest, and reliable. Box 3593

If you are Buying or Selling Used Equipment this is the place to let the Excavating Industry know about it.

Notes . . .

Continued from page 75

London for Caterpillar Tractor Co., has been appointed manager of the company's office in New York City. J. B. Wilson, New York manager for the past two years, is now assistant export manager of the Latin American Division, with offices in Peoria, Ill. D. F. Shinn, district representative in Stockholm, moves to London as representative in the United Kingdom and Republic of Ireland. C. R. Poor, field engineer, becomes district representative in the Scandinavian countries.

Hensley Equipment Co., San Leandro, Calif., announces appointment of Crook Co., 2314 N. Chester Ave., Bakersfield, Calif., as exclusive distributor of Hensley Equipment Co., Inc. in the County of Kern, Calif. The firm manufactures dozer and scraper rippers, dozer brush rakes, bottom track rollers, cutting edges and allied tractor parts.

General Electric, Schenectady, N. Y., announces completion of a new structure to house General Electric's welding sales branch at Tulsa, Okla. The building, which includes offices, service and warehouse facilities, will serve Colorado, Wyoming, Kansas, Arkansas, and Oklahoma. The new G-E facility is designed to improve service to the pipeline industry in the Southwest, as well as to other users of welding equipment, electrodes and accessories. Lester F. Douglas is manager of the Tulsa sales branch, which will be the scene of a community open house in the near future.

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., reveals that shareholders of the Baker Manufacturing Co., Springfield, Ill., at a meeting held Feb. 8, 1955, approved the sale of the company's assets to the Allis-Chalmers Manufacturing Co. Directors of Baker had previously approved the plan whereby all assets of Baker would be sold to Allis-Chalmers in exchange for Allis-Chalmers common stock. The amount of stock involved in the sales remains to be determined by inventories and audits to be made prior to Allis-Chalmers taking over the operation of the Baker plants at Springfield and Beardstown, Ill. W. A. Roberts, president of Allis-Chalmers, said his firm's board of directors had approved the transaction, and since the stock involved, which will be transferred to Baker, was already authorized, further action by Allis-Chalmers shareholders is not required. Allis-Chalmers will begin operating the Baker Manufacturing Company's plants April 1, 1955, with all the Baker employees, except its principal officers, continuing in their present capacities. The Baker Company occupies floor space in Springfield and Beardstown of more than 180,000 square feet, and employs approximately 500 persons. In addition to its Beardstown plant, its property there consists of over twenty acres of land for future expansion. It is one of the oldest manufacturers of road building equipment in the United States, having been in business since 1908. It manufactures a complete line of bulldozers and gradebuilders, road rippers, road rooters and sheepsfoot tamping rollers, as well as snow plows for trucks and tractors.

The Cooper-Bessemer Corp., Mount Vernon, O., announces the promotion of two men. Robert F. Lay has been promoted to General Sales Manager of The Cooper-Bessemer Corp. Grant C. Woodard has been appointed Assistant General Sales Manager. Lay first became associated with Cooper-Bessemer in 1924 as a co-op student at the University of Cincinnati. He later joined the Baldwin Locomotive Co. where he became Assistant Sales Manager. In 1940 Lay went to The Elliott Co., Jeanette, Pa., as Sales Engineer. He later became Chief Engineer of Elliott's Supercharging Division and Production Manager. Returning to Cooper-Bessemer in 1946, Lay headed the Company's Stationary Application Engineering Section, a position he held until his promotion to Chief Engineer, Products Division, a year ago. Several months later he was appointed Assistant General Sales Manager for all company products, including engine-driven and motor-driven compressors, gas engines, diesel engines and gas-diesel engines. The promotion of Woodard to Assistant General Sales Manager follows comprehensive experience in both engineering and sales. A graduate in mechanical engineering from Cornell University, Woodard received his basic training at the Company's engineering facilities at the factory in Mount Vernon, Ohio. He then served as application engineer and later as sales engineer working from the home office on engine and compressor installations for pipe lines and refineries throughout Ohio, Kentucky, West Virginia, Tennessee and Michigan.

"Don't act so shocked! I've seen you sit down and rest many a time."

Braided Wire Rope Slings

Materials handling—from unloading a car of pipe to handling a 200-ton generator—requires a wide variety of safe, economical, easy-to-handle slings. The sizes and types of Macwhyte Slings are practically unlimited—they are available in many standard designs or can be custom-made. Bulletin lists and illustrates many types and body styles in Round-Braided, Flat-Braided and Single- Part Slings. *Specify Bulletin 5308.*

The proper choice from this wide variety of wire rope products means —

LONGER and SAFER SERVICE

Wire Rope

Proper selection of wire rope is most important in getting safe, economical operation. To provide the right ropes for each of the many kinds of equipment, Macwhyte Company makes a thousand and one types and sizes. Included are PREformed Internally Lubricated Ropes, Galvanized Ropes, Stainless Steel, and Monel Metal Ropes. *Request Catalog G-16.*

Wire Rope Assemblies

Safe-Lock Wire Rope Assemblies provide a unit of wire rope with permanently attached fittings made to specified size, length, and strength needed. A wide selection of fittings and wire rope are made for use on small gasoline powered equipment; outboard motors; mining and excavating machines; agricultural implements; automotive, aircraft, marine, and laboratory equipment. *Ask for Catalog 5201.*

Recommendations for the correct wire rope product for your needs will be gladly furnished.

MACWHYTE

MACWHYTE COMPANY
2903 Fourteenth Avenue
Kenosha, Wisconsin

Manufacturers of Internally Lubricated PRE-formed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Galvanized, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies.

Mill Depots:
New York • Pittsburgh • Chicago
St. Paul • Ft. Worth • Portland
Seattle • San Francisco • Los Angeles

A full three yards or more of dirt and rock are dumped by the HD-15GC Tractor Shovel into the TR-200. Five passes and this wagon was on its way with a heaped 15-yd load.

Contractor Excavates Steep, Rocky Hills with Dozer, Tractor Shovel, Rock Wagons

Lowe Construction Co., of Marion, Iowa, turned to a bulldozer, Tractor Shovel and rock wagon combination when they ran into the problem of cutting down steep, rocky hills on a road job.

This was in connection with the million-yard contract of straightening, widening and relocating 19 miles of State Highway 13 north from Waukon, Iowa, to the Minnesota line. An estimated 200,000 yards of rock had to be handled and Lowe's problem consisted of choosing equipment to best work the extreme cuts on hills too high for excavators.

The Allis-Chalmers dozer could easily make it to the top of each hill. There it benched out the cut in a series of steps, pushing material off the hill for loading at road level. Because of the power and ability of the dozer to handle the rock, little blasting was necessary. Finished slopes range from 1½:1 to ¼:1.

At the road level, an Allis-Chalmers 3-yd HD-15GC Tractor Shovel was used for loading rock and dirt into two Allis-Chalmers TR-200 Rock Wagons. Because of its compactness and maneuverability, the Tractor Shovel could get into almost inaccessible places and bring out a maximum load. The torque converter enabled the tractor to crowd into the bank steadily throughout loading cycle. Speed of engine and hydraulic pump stayed constant to give responsive, powerful bucket action.

After they were loaded, the rock wagons traveled to the fill section up to 3,000 feet away. The high horsepower-to-yardage ratio of 16 to 1 gave these units fast average travel speeds even on adverse grades and in heavy going.

This four-unit team of Allis-Chalmers equipment handles only one phase of the Lowe Construction Co. contract. Other Allis-Chalmers equipment on the job includes: 18 crawler tractors, 6 pull-type scrapers and one motor grader.

◀ The TR-200's big bowl top made an easy target for the Tractor Shovel. Quick dumping helped get the wagon back in a hurry for the next load.

Call on your Allis-Chalmers dealer and discuss with him the many units and combinations available to help you on any job.

ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U. S. A.